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TRANSMITTAL OF RESPONSE TO COMMENTS DOCUMENT ON OPERABLE UNIT 1 PRE-FINAL DESIGN PACKAGES I AND II, MARCH 1996

06/13/96

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DOE-FN EPAS
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RESPONSES

Department of Energy
Ohio Field Office
Fernald Area Office
P. O. Box 538705
Cincinnati, Ohio 45253-8705
(513) 648-3155

JUN 13 1996
DOE-1003-96

Mr. James A. Saric, Remedial Project Director
U.S. Environmental Protection Agency
Region V - SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF RESPONSE TO COMMENTS DOCUMENT ON OPERABLE UNIT 1 PRE-FINAL DESIGN PACKAGES I AND II, MARCH 1996

The purpose of this letter is to transmit the Department of Energy, Fernald Area Office (DOE-FN) Response to Comments document (RTC) for the Operable Unit 1 (OU1) Remedial Design, Pre-Final Design Packages, I and II. The RTC formally responds to both the U.S. Environmental Protection Agency (U.S. EPA) and the Ohio Environmental Protection Agency (OEPA) comments on the Pre-Final Design.

The U.S. EPA comments on the Pre-Final Design were received by the DOE-FN on May 15, 1996. In accordance with the Amended Consent Agreement, the RTC must be submitted to the EPA within 30 days of DOE-FN receipt of U.S. EPA comments. Accordingly, the enclosed RTC responds to the both U.S. EPA and the OEPA comments on the Pre-Final Design and is required to be submitted by June 14, 1996.

As noted in the Addendum to the Remedial Design Work Plan, of the eight plans included in the Pre-Final Design, the Transportation and Disposal Plan and the Site Improvement Plan will not be implemented by the OU1 remedial action subcontractor, and comments received on those plans have been addressed in the RTC and incorporated into those plans. On the remaining six plans of the Pre-Final Design (Plant Facilities Design Criteria Package, Plant Facilities Engineering Package, Equipments Specifications, Construction Schedule, and Excavation Plan) comments pertinent to the OU1 remedial action subcontractor were addressed and incorporated (i.e, air monitoring requirements); comments that were not

pertinent to the OU1 remedial action subcontractor were addressed with no changes made to the plans (e.g., comments specific to an equipment specification were clarified, but the specification was not revised).

The Pre-final Design along with the RTC document will be provided to the OU1 remedial action subcontractor. The OU1 remedial action subcontractor will be required to prepare design plans similar in content to the six items described in the above paragraph. These plans would then be submitted to EPA for review.

If you have any questions, please contact Dave Lojek at (513) 648-3127.

Sincerely,

Johnny W. Reising
Fernald Remedial Action
Project Manager

FN:Lojek

Enclosure: As Stated

cc w/enc:

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RESPONSE TO USEPA AND OHIO EPA COMMENTS

OPERABLE UNIT 1 REMEDIAL DESIGN PRE-FINAL DESIGN PACKAGES I AND II, MARCH 1996

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO

REMEDIAL DESIGN

JUNE 1996

U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

RESPONSE TO USEPA AND OHIO EPA COMMENTS

OPERABLE UNIT 1 REMEDIAL DESIGN PRE-FINAL DESIGN PACKAGES I AND II, MARCH 1996

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO

REMEDIAL DESIGN

JUNE 1996

U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

RESPONSE TO USEPA COMMENTS ON THE OPERABLE UNIT 1 REMEDIAL DESIGN PRE-FINAL DESIGN PACKAGES, I AND II, MARCH 1996

USEPA GENERAL COMMENTS

Pre-Final Design Package I

Equipment Specifications
Commenting Organization: U.S. EPA — Commentor: Saric
Section #: 13652 — Page #: NA — Line #: NA
Original General Comment #: 1

Comment: Original General Comment # 12 on the 30 percent design package requested specific information about the operating condition of the shredder when material is dropped in the hopper. It is still not clear whether the shredder is to be stopped or will be operating at full speed when material is dropped in the hopper. This issue should be addressed in the final design package.

Response: Comment acknowledged. See page A-9 of the Roadmap. Specification 13652, Debris and Process Shredder Performance Specifications, Section 2.4.D.1.c, lines 33 and 34 states that "The performance test will be run with the shredder (in) operation at full speed."

Action: No action required.

Should the project return to a Design, Build and Operate (DBO) approach, Page 19, lines 31 and 32 would be revised to read: "...shall be designed to continue to operate at full speed while withstanding the 7 - foot, 0 inch freefall of material..." to emphasize this requirement.

Commenting Organization: U.S. EPA — Commentor: Saric
Section #: 13652 — Page #: NA — Line #: NA
Original General Comment #: 2

Comment: The response to Original General Comment #13 on the 30 percent design package states that the fire suppression system has been deleted from specification section 13652. However, the control systems for both the process and debris shredders call for local indication of an activated fire suppression system. This discrepancy should be corrected in the final design package.

Response: Comment acknowledged. The statement on Page 9 of the Roadmap, line 32 is not clear. It should read "The requirement for an installed fire suppression system has been deleted. However, provisions will be made to install a fire suppression system at a future date."

Action: No action required.

This requirement will be added to the specification as a quoted option similar to the approach taken with the dust suppression system should the project return to the DBO approach. The requirement for a local indication of activation of the fire suppression system would also be a part of this option.

Pre-Final Design Package II

Excavation Plan, Waste Excavation
Commenting Organization: U.S. EPA — Commentor: Saric
Section #: NA — Page #: NA — Line #: NA
Original General Comment #: 3

Comment: The waste excavation plan appears to be general in nature and there is not enough specific information on the excavation methods or materials to be used to complete pit excavation. Two examples of this are: 1) the lack of information on the slope required to maintain an open trench and 2) the lack of information on the slurry to be used for hydraulic excavation. Section 5.2.3 also states that approximately 3-feet of soil below the pit waste will be excavated; however, there is no data to support this assumption. The text needs to be modified to be less general and to provide specific information on the excavation process, including the management and control of surface water during excavation.

Response: Comment acknowledged. It is anticipated that a minimum 3H:1V, or flatter, slope will be necessary. Although Waste Pit 5 displayed the highest moisture content, it is clear that the fine grained waste has a relatively high porosity in comparison to the material's permeability. Thus, while intergranular water content is high, the interconnectedness of the intergranular pore spaces is low. This results in high material stability. Available evidence, including field observations, support the conclusion that maintaining an open trench in Pit 5 will not be a major concern. During Pit 5 sampling, some resistance to the sampling equipment was encountered. Also, at the east end of Pit 5 is a well defined trench in the waste. This trench is a remnant of dredging which was done in 1993. The trench sidewalls clearly retain the shape of the dredge, even after some 3 years after dredging.

These observations and analysis results support a conclusion that the waste is fairly rigid and should possess sufficient strength to maintain an open trench.

One phase of the DEEP treatability study investigated slurrying of the waste as an excavation option. However, based on the waste pit locations which were part of DEEP, slurrying was tentatively eliminated as a viable option. This does not, however, rule out the possibility that zones of pit waste may be encountered during excavation which are amenable to slurrying. Utilization of slurrying as an excavation method clearly presents logistical difficulties. DOE has prepared for this contingency. A slurry pump and the associated hoses and power supply, is on hand. Also, holding tanks of sufficient capacity and material strength to hold slurried waste are on hand. Should slurrying be determined to be the most efficient means of excavation, changing excavation operations to slurrying can be accomplished with minimal impact to the project schedule.

The approximately 3 feet figure, presented in the FS in February 1994, is the amount of material planned for removal once excavation of the pits has been completed. Project costing assumptions are necessary for volumetric and schedule, and work scope calculations. At the time 3 feet was selected as the basis for those calculations. This figure in no way implies that once 3 feet of pit liner material is removed, clean-up will cease. Confirmation sampling will be performed once pit liner materials below 3 feet are accessed.

Action: No action required.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 6 Page #: NA Line #: NA
Original General Comment #: 4
Comment: The air monitoring program presented is too general and confusing. It is not clear whether an air monitoring program, other than the current site-wide monitoring programs will be completed during OU1 removal actions. No information is presented on the results of design process modeling and maximum release estimates for off-site exposure and whether a supplemental air monitoring program for OU1 remedial actions is appropriate. There is also no discussion on whether an air monitoring program will be completed to provide data on the effectiveness of engineering controls or to address public concerns. This package is the pre-final design package for removal actions at OU1. It is expected that a more complete monitoring program be presented at this late stage in the remedial design. If it is determined that a supplemental air monitoring program is not necessary, then justification for this conclusion should be added to the text.

Response: Methods for control of radionuclide, radon, and toxic emissions are discussed in detail in the Design Criteria Document, Appendix B. Control of point-source radon and radionuclide emissions from the dryer stack will be verified through continuous monitoring of the dryer stack. Control of toxic emissions from the dryer stack will be verified through performance testing conducted during initial operation.

As described in the Design Criteria Document, fugitive emissions of radionuclides and radon from storage piles and excavation activities will be controlled using standard Best Available Technology control measures. Data from the Fernald Site Environmental Monitoring Program, which includes air monitors in the Waste Pit Area, at the FEMP fenceline, and offsite, as well as continuous radon monitors, will be used to assure that any higher-than anticipated impact from fugitive emissions is identified.

Continuous stack monitoring for radon and radionuclides, performance testing for toxic emissions, and occupational air monitoring are the only currently planned project-specific air monitoring activities. The ARASA subcontractor will be responsible for proposing what, if any, additional project specific air monitoring should be implemented to provide additional confirmation of the effectiveness of control measures or to address public concerns.

Action: The requirement for performance testing for air toxics has been clarified in the Design Criteria Document, Appendix B. The revised Appendix B is included as an attachment to this RTC document.

Materials Management Plan
Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 5
Comment: The materials management plan states that soils generated before opening of the on-site disposal facility (OSDF) will be managed in accordance with the requirements of the U.S. Environmental Protection Agency (U.S. EPA)-approved remedial action (RA) 17 work plan. It should be noted that the RA 17 work plan, revision 3, was disapproved by U.S. EPA in a letter to the U.S. Department of Energy (DOE) on February 15, 1996. No response to the U.S. EPA comments provided in that letter have been received, and

major issues regarding management of remediation-generated soils need to be resolved. The materials management plan should be revised to incorporate OU-specific material management details including soil screening methods to determine soils disposition.

Response: As stated in Section A.5.2.2 of the materials management plan, the only soils assumed to be generated by OU1 prior to the opening of the on-site disposal facility (OSDF), are those removed during initial site preparation activities. Subsequent to the submission of the Pre-Final Design Package, DOE provided additional details relative to the management of these soils. Specifically, in a letter dated April 11, 1996, to the EPAs, it was stated that "the OU1 soils generated from site preparation activities destined for eventual treatment in the OU1 remediation facility will be managed within the OU1 boundary," at a specific location provided on a figure enclosed with the letter. This is the only stockpile DOE plans to generate through site preparation activities. Further, this letter stated that "the topsoil stockpile area will be surrounded with silt fence (see Site Improvement Plan for barrier control areas); and, the soil piles will also be hydro-seeded for dust suppression." This approach to materials management was approved by U.S. EPA by letter of April 30, 1996.

Action: No action required.

USEPA SPECIFIC COMMENTS

Pre-Final Design Package I

Plant Facilities Design Criteria Document, Design Criteria Document
Commenting Organization: U.S. EPA Commentor: Saric
Section #:2.1.5.1 Page #: 2-11 Lines#:19 to 36
Original Specific Comment #:1

Comment: This section discusses the types of wastes to be placed in the OSDF. The text states that soils incompatible with the clay liners or the underlying native clays will not be allowed to be placed in the OSDF. The text further states that efforts will be made to segregate, for treatment, the soil that qualifies as RCRA characteristic waste; however, the text does not propose how waste will be screened for RCRA characteristic waste or how it will be determined if the waste is incompatible with the underlying liners and native clays. The text needs to be revised to reference the appropriate work plan or document that discusses these issues. If no reference is available, the text should be modified to include this information.

Response: Comment acknowledged. Responsibility for material compatibility for the on-property disposal facility lies with OU2 and is based on the waste acceptance criteria established in the OU2, OU3 and OU5 RODs. As documented in the Record of Decision for Remedial Actions at Operable Unit 5, "A best management approach will also be applied during all excavation activities to identify, segregate (and treat as necessary) soil containing concentrations of organic compounds at levels that potentially could jeopardize the integrity of the earthen liners that are built into the on-property disposal facility."

Consistent with the OU1 ROD, waste pit material will not be disposed in OSDF. Confirmation sampling of contaminated soils surrounding the waste pit area, and any additional activities required to confirm that FRLs or OSDF WAC (including RCRA characteristics) have been met, will be conducted consistent with the OU5 site-wide excavation plan and subsequent area-specific sampling plans.

Action: No action required.

Site Improvement Plan, Construction Specifications
Commenting Organization: U.S. EPA Commentor: Saric
Section #: 01011 Page #: 1 Line #: NA
Original Specific Comment #: 2

Comment: The submittal listing tables following Page 1 has a column designating samples as "MM." The "MM" column should be added to Page 1 as Item No. 12: 1. "MM" indicates that samples are required.

Response: Agree. However, the referenced specification is being implemented correctly in the field. Providing the additional description would not result in a change in field implementation; therefore, the spec will not be revised.

Action: No action required.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 02270 Page #: 1 of 4 Line #: 5
Original Specific Comment #: 3 Subsection 1.4(A)
Comment: "Sections 207 and 770" should be added after Ohio Department of Transportation (ODOT) to make this line read as follows: "be in compliance with the provisions of ODOT Sections 207 and 770."

Response: Agree. However, the referenced specification is currently being implemented in accordance with those sections. Adding the specific ODOT references would not result in a change in field implementation; therefore, the spec will not be revised.

Action: No action required.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 02733 Page #: 1 of 23 Line #: NA
Original Specific Comment #: 4
Comment: Section 1.1.(A) refers to a "unit capable of raw unscreened stormwater." The word "pumping" should be inserted so that the line reads "unit capable of pumping raw unscreened stormwater."

Response: Agree. However, the referenced specification is being implemented correctly in the field. Correcting the omission would not result in a change in field implementation; therefore, the spec will not be revised.

Action: No action required.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 02900 Page #: 1 of 7 Line #: NA
Original Specific Comment #: 5
Comment: In Section 1.4(A) at the end of the paragraph, a reference to "Section 659" of the ODOT provisions should be made.

Response: Agree. However, the referenced specification is currently being implemented in accordance with the referenced section. Providing the specific ODOT section would not result in a change in field implementation; therefore, the spec will not be revised.

Action: No action required.

Site Improvement Plan, Description of Site Preparation Activities
Commenting Organization: U.S. EPA Commentor: Saric
Section #: 1 Page #: 1 Line #: 29
Original Specific Comment #: 6
Comment: This section describes the major site improvements to be completed and includes the capacity of the storm water management pond and storm water spillway. The capacity of the existing drainage ditch in terms of handling the water from a 100-year, 24-hour storm event is not mentioned. The capacity of the existing drainage ditch should be stated.

Response: Comment acknowledged. The capacity of the existing drainage ditch north of the existing rail spur referred to on line 29 of page 1 of the Description of Site Preparation Facilities was designed based on draining a 600 acre area and is more than ample for draining this 10 acre area (that will only discharge to the ditch on storm events greater than 25 year recurrence interval).

Action: No action required.

Equipment Specifications, Debris and Process Shredder
Commenting Organization: U.S. EPA Commentor: Saric
Section #: 13652 Page #: 10 of 30 Line #: 13
Original Specific Comment #: 7
Comment: This sentence appears to be incomplete. This sentence should be corrected in the final design package.

Response: Comment acknowledged. Line 13 on page 10 of 30 represented a review comment which was not intended to be incorporated in Specification 13652.

Action: No action required.

If the DBO approach is resumed, the review comment will be omitted from the text.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 13652 Page #: 12 of 30 Line #: 16 - 19
Original Specific Comment #: 8
Comment: The specification for the process shredder refers to Table 1 of Article 2.4 for the materials to be used for the acceptance test. However, Table 1 addresses only the debris shredder. The reference or table should be corrected in the final design package.

Response: Comment acknowledged. See 2.1.B.1.a, page 18 of 30, Specification 13652 for proper description of test material for the process shredder.

Action: No action required.

If the DBO approach is resumed the lines 18 and 19 of para 12 of 30 "in Table 1 of article 2.4" will be deleted and replaced by the following: "in section 2.1.d.1.a".

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 13652 Page #: 20 of 30 Line #: 19
Original Specific Comment #: 9
Comment: The specification states that the feed hopper design process rate is 70 cubic yards per hour. This rate should be reviewed to ensure that it is compatible with the shredder rate of 850 tons of soil over a 16-hour period. Any necessary changes should be included in the final design package.

Response: Comment acknowledged. The hopper of the shredder must be sized for the "instantaneous" hourly rate. The shredder rate of 850 tons of soil over a 16-hour period is not directly related, other that the fact that the "instantaneous" hourly rate must be

significantly greater (which it is).

Action: No action required.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 13652 Page #: 29 of 30 Line #: 32
Original Specific Comment #: 10

Comment: The specification states that Fernald Environmental Management Corporation (FERMCO) will perform the acceptance testing in the presence of the seller. It is recommended that the seller perform the testing in the presence of FERMCO so as to place the responsibility for completing an acceptable test on the seller.

Response: Comment acknowledged. Comment Nos. 10 and 11 relate to acceptance testing of the shredder(s) and Comment No. 13 relates to acceptance testing of the dryer. As the buyer is responsible for care, custody and control of equipment after the receiving inspection has been completed, installation and testing of this equipment is conducted by the buyer (owner) under directions of the equipment vendor for reasons of insurance, liability and union work scope. Typically the changes/revisions required to pass the acceptance test are minor adjustments. More extensive work on large equipment (such as the shredder and dryer) which cannot be readily returned to the vendor's shop, are also performed by the buyer (owner/contractor).

Action: No action required.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 13652 Page #: 30 of 30 Line #: NA
Original Specific Comment #: 11

Comment: The specification states that FERMCO will make any needed changes following the acceptance testing. It is recommended that FERMCO have the seller make any necessary changes so as to ensure that the responsibility for implementing an acceptable machine rests with the seller. Any necessary changes in the design based on the acceptance testing should be included in the final design package.

Response: Comment acknowledged. Comment Nos. 10 and 11 relate to acceptance testing of the shredder(s) and Comment No. 13 relates to acceptance testing of the dryer. As the buyer is responsible for care, custody and control of equipment after the receiving inspection has been completed, installation and testing of this equipment is conducted by the buyer (owner) under directions of the equipment vendor for reasons of insurance, liability and union work scope. Typically the changes/revisions required to pass the acceptance test are minor adjustments. More extensive work on large equipment (such as the shredder and dryer) which cannot be readily returned to the vendor's shop, are also performed by the buyer (owner/contractor).

Action: No action required.

Equipment Specifications, Indirect Dryer

Commenting Organization: U.S. EPA — Commentor: Saric
Section #: 11182 — Page #: 8 of 53 — Line #: 37
Original Specific Comment #: 12

Comment: The specification states that the indirect dryer seller should submit the terms and conditions of its warranty. It would be appropriate for FERMCO to establish the warranty conditions so that all bidders could submit a price for the same warranty. Any changes should be made in the final design package.

Response: Comment acknowledged. The dryer specification is a performance specification and vendors will not be bidding on identical items. However, we concur that a more definitive requirement in the specification may be appropriate.

Action: No action required.

If the DBO approach is resumed, the warranty requirements for the dryer will be reevaluated.

Commenting Organization: U.S. EPA — Commentor: Saric
Section #: 11182 — Page #: 53 of 53 — Line #: NA
Original Specific Comment #: 13

Comment: A paragraph should be added saying that the seller is responsible for making any revisions needed to pass the acceptance test. This paragraph should be included in the final design package.

Response: Comment acknowledged. Comment Nos. 10 and 11 relate to acceptance testing of the shredder(s) and Comment No. 13 relates to acceptance testing of the dryer. As the buyer is responsible for care, custody and control of equipment after the receiving inspection has been completed, installation and testing of this equipment is conducted by the buyer (owner) under directions of the equipment vendor for reasons of insurance, liability and union work scope. Typically the changes/revisions required to pass the acceptance test are minor adjustments. More extensive work on large equipment (such as the shredder and dryer) which cannot be readily returned to the vendor's shop, are also performed by the buyer (owner/contractor).

Action: No action required.

Pre-Final Design Package II

Excavation Plan, Waste Excavation

Commenting Organization: U.S. EPA — Commentor: Saric
Section #:3 — Page #:3-3 — Lines #: 29 to 30
Original Specific Comment #: 14

Comment: This section discusses the pit excavation sequence. The text states that the exterior stockpile will be used for stockpiling "wetter wastes that drain over time"; however, there is no information on how this drainage will be managed. The text should be revised to address this issue.

Response: Comment acknowledged. Stockpiled waste will be temporarily stored until such time as it can be processed. This time period may vary, due to any number of reasons relating to excavation schedules, or operation and maintenance of the waste treatment, loadout systems. Stockpiled waste will be allowed to drain by gravity to remove that fraction of water which will freely drain under those conditions. Thus, the time of stockpiling of waste, depending on the pit of origin, may be a function of the waste moisture content, as well as chemical properties, as opposed to needing to store the waste for some operation and maintenance purpose. All surface drainage emanating from stockpiled waste material will be collected and diverted to a pre-treatment component, then to the site AWWT.

Action: No action required.

If the DBO approach is resumed, the Excavation Plan will be revised to include the information contained in the response.

RESPONSE TO OHIO EPA COMMENTS
ON THE OPERABLE UNIT 1 REMEDIAL DESIGN
PRE-FINAL DESIGN PACKAGES, I AND II, MARCH 1996

1.) Commenting Organization: Ohio EPA Commentor: Geo Trans, Inc.
Section #: General Page. #: Line #: Code: G
Original Comment #:
Comment: Please prepare a detailed table of contents for this document. This should include a list of tables, figures, and drawings.

Response: Comment acknowledged. The design packages are comprised of individual documents treated as stand-alone documents; as such, each provides its own detailed table of contents. The "roadmap" located at the front of Package I provides a quick reference to the contents of Pre-final Design Packages I and II.

Action: No action required.

2.) Commenting Organization: Ohio EPA Commentor: Geo Trans, Inc.
Section #: Plant Facilities Design Criteria Document Page. #: 2-4 Line #: 30 & 31 Code: G
Original Comment #:
Comment: This section is inconsistent with Section 6, Dried Waste Loadout and Blending. Section 1 of the Plant Facilities Engineering calls for blending of dried and wet waste using a twin auger mixer. (Page 1-4, lines 12 through 15)

Response: Section 1 of the Plant Facilities Engineering, Process Description, addresses blending during the waste preparation phase of the OU1 operation. Section 2.1.1.5 of the Design Criteria Document and Section 6 of the Plant Facilities Engineering, Process Description, address blending during the waste blending and loadout phase of the operation. The method of blending to be used depends upon which phase of the operation the blending is to take place.

Action: No action required.

3.) Commenting Organization: Ohio EPA Commentor: Geo Trans, Inc.
Section #: Plant Facilities Design Criteria Document Page. #: 2-11 Line #: 30 & 31 Code: G
Original Comment #:
Comment: How will incompatibility of wastes with the clay liner and underlying clay materials be determined?

Response: Comment acknowledged. Responsibility for material/liner compatibility for the on-property disposal facility lies with OU2 and is based on the waste acceptance criteria established in the OU2, OU3 and OU5 RODs. As documented in the Record of Decision for Remedial Actions at Operable Unit 5, "A best management approach will also be applied during all excavation activities to identify, segregate (and treat as necessary) soil containing concentrations of organic compounds at levels that potentially could jeopardize the integrity of the earthen liners that are built into the on-property disposal facility.

Consistent with the OU1 ROD, waste pit material will not be disposed in OSDF. Confirmation sampling of contaminated soils surrounding the waste pit area, and any additional activities required to confirm that FRLs or OSDF WAC (including RCRA characteristics) have been met, will be conducted consistent with the OU5 site-wide excavation plan and subsequent area-specific sampling plans.

Action: No action required.

4.) Commenting Organization: Ohio EPA Commentor: Geo Trans, Inc.
Section #: Plant Facilities Design Criteria Document Page. #: 2-11 Line #: 32 to 35 Code: G
Original Comment #:
Comment: How will RCRA characteristic wastes be identified if they are present?

Response: Comment acknowledged. Prior to off-site shipment, treated waste will be characterized for disposal facility waste acceptance criteria (WAC), including RCRA characterization. Consistent with the OU1 ROD, waste pit material will not be disposed in the on-site disposal facility (OSDF). Confirmation sampling, and any additional activities required to confirm that FRLs or OSDF WAC (including RCRA characteristics) have been met, will be conducted consistent with the OU5 site-wide excavation plan and subsequent area-specific sampling plans.

Action: No action required.

5.) Commenting Organization: Ohio EPA Commentor: Geo Trans, Inc.
Section #: Plant Facilities Engineering - Process Descriptions Page. #: Line #:
Original Comment #:
Comment: There should be a process and instrumentation diagram (P&ID) included with this design package. This should supplement the control philosophy descriptions which reference the process flow diagrams. A P&ID would make this section much easier to follow.

Response: Comment acknowledged. The P&IDs were not identified as a required deliverable in the Final RDWP, to which EPA agreed through its approval of the RDWP.

Action: No action required.

6.) Commenting Organization: Ohio EPA Commentor: Geo Trans, Inc.
Section #: Plant Facilities Engineering - Process Descriptions Page. #: 3-2 Line #: 2-4 Code: G
Original Comment #:
Comment: How will this diversion of soils containing non-ferrous metals occur? Will some effort be made to verify the non-ferrous metals have been removed from the soils? Please provide additional explanation of this system.

Response: The Design Build and Operate (DBO) design presented in the Pre-final Engineering Design packages was based on removal of ferrous metals with a magnetic separator followed by separation of remaining non-ferrous metal from the waste using a detector sensitive to all metals.

Action: No action required.

7.) Commenting Organization: Ohio EPA Commentor: Geo Trans, Inc.
Section #: Plant Facilities Engineering - Control Philosophy Page. #: 2-5 Line #: 28 to 29
Original Comment #:
Comment: Please explain how the slurry feed and soils feed rate to the dryer will be measured.

Response: The DBO design slurry feed pump flow would be flow controlled. Solid feed would be introduced into the dryer by a variable speed screw conveyor. Residence time in the dryer would be controlled by controlling the dryer drum rotation speed.

The solid material will be fed to the dryer by a twin screw auger conveyor. This conveyor receives material from a twin screw auger feeder/feed hopper arrangement via a skip hoist. The feed hopper and screw feeder assembly will be placed on load cells. Each time the skip hoist transfers material to the hopper, the assembly will be weighed to determine the amount of material discharged in between skip hoist transfers. The total amount of material conveyed over a given time period will be averaged to determine the feed rate to the dryer.

Action: No action required.

8.) Commenting Organization: Ohio EPA Commentor: DSW
Section #: 2.3.5.3 Design Criteria Page #: 2-45,46 Line #: Code: C
Original Comment #:
Comment: Page 2-45, line 26 and 2-47, line 14. "Rainwater and Land Development" referred to in the former but not the latter. This should be included on page 2-47, line 14.

Response: Agree. Page 2-47, line 14 should read, "..and materials shall be in accordance with ODOT and Rainwater and Land Development standards for control." If the DBO approach is resumed, the text will be revised to include both references. Both references will be included in the design criteria provided to the ARASA contractor in his scope of work.

Action: No action required.

9.) Commenting Organization: Ohio EPA Commentor: DSW
Section #: 3.0 References Page #: Line #: Code: C
Original Comment #:
Comment: Add ODOT and Rainwater and Land Development.

Response: Agree.

Action: The following references were added to Section 3.0, References.
(ODOT, 1992) 1992, *Location and Design Manual, Volume Two Drainage Design, Ohio Department of Transportation.*
(ODNR 1996) January 1996, *Rainwater and Land Development, Ohio's Standards for Stormwater Management, Land Development, and Urban Stream Protection*, Second Edition, ODNR, Division of Soil and Water Conservation.

The revised Section 3.0 is included as an attachment to this RTC document.

10.) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Substantive Permit Crosswalk Page #: B-23 Line #: Code: E
Original Comment #:
Comment: Table B-4, type 1-1.5 acre "ratio", not "ration"

Response: Agree.

Action: Under Compliance Demonstration, "ration" has been changed to "ratio." A revised Appendix B has been included in the attachment to this RTC document.

11.) Commenting Organization: Ohio EPA Commentor: DSW
Section #: Civil Specs. Submittal Listing Table, section 01011 of Spec. Submittal Listing Division 2, page 1 of 3, section 02270, erosion control Page #: Line #: Code: C
Original Comment #:
Comment: Section reads "Maintenance/Instruction", does not appear to be correct, perhaps "Instruction" should read "Construction".

Response: Agree. However, the referenced specification is currently being used correctly in the field. Modification to the spec to correct the typographical error would not result in a change in field implementation; therefore, the spec will not be revised.

Action: No action required.

12.) Commenting Organization: Ohio EPA Commentor: DSW
Section #: 02200, 1.4 Page #: 2 of 11 Line #: 6 Code: C
Original Comment #:
Comment: References should include "Rainwater and Land Development", 2nd edition, 1996. Page 7 of 11, line 10 should read per "Rainwater and Land Development" and ODOT (see page 2-44, line 40).

Response: Agree. However, the referenced specification is currently being used in the field. Adding a reference to the "Rainwater and Land Development" manual would not result in a change in field implementation; therefore, the spec will not be revised. In addition, OU1 activities were planned during preparation of and integrated the requirements of the FEMP Stormwater Pollution Prevention Plan (SWPPP); the SWPPP does reference the "Rainwater and Land Development" manual. Subsequently, OU1 stormwater management practices are intended to be consistent with that reference.

Action: No action required.

13.) Commenting Organization: Ohio EPA Commentor: DSW
Section #: 02270, 1.4 Page #: 1 of 4 Line #: 32 Code: C
Original Comment #:
Comment: Add "Rainwater and Land Development". Page 3 of 4, 2.1, line 3 should refer to the reference of "Rainwater and Land Development" and ODOT. Page 32 of 4, line 32. Use of hay bales not recommended. Note that hay bales have already been installed on some check dams per the drawings. These existing check dams should be monitored closely by FERMCO for efficacy.

Response: Agree. However, the referenced specification is currently being used correctly in the field. Adding a reference to the "Rainwater and Land Development" manual would not result in a change in field implementation; therefore, the spec will not be revised. In addition, OU1 activities were planned during preparation of the FEMP Stormwater Pollution Prevention Plan (SWPPP); the SWPPP does reference the "Rainwater and Land Development" manual. Subsequently, OU1 stormwater management practices are intended to be consistent with that reference.

Action: Implementation of the FEMP SWPPP requires frequent inspection of check dams. FERMCO will continue to inspect OU1 stormwater management controls as an SWPPP requirement.

14.) Commenting Organization: Ohio EPA Commentor: DSW
Section #: 02900 Page #: 1 of 7 Line #: Code: C
Original Comment #:
Comment: Please reference "Rainwater and Land Development". Page 5 of 7, Section 3.2, line 23 refers to article 2.1, paragraph b, subparagraph 1.b., should read 2.1, paragraph c, subparagraph 1.b

Response: Agree. However, the referenced specification is being used correctly in the field. Adding a reference to the "Rainwater and Land Development" manual and changing a typographical would not result in a change in field implementation; therefore, the spec will not be revised.

Action: No action required.

GENERAL

15.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: General Page #: n/a Line #: n/a Code: C
Original Comment #:
Comment: Continuous monitoring of stack emissions are required per NESHAPS (40 CFR 61, Subpart H). These emissions and reporting requirements are applicable.

Response: Agree. 40 CFR 61, Subpart H requires continuous monitoring of radionuclide emissions from point sources (stacks or vents) with the potential to cause an effective dose equivalent (EDE) to an offsite resident greater than 0.1 mrem. As described in the Design Criteria Document, Appendix B, a continuous monitor will be installed on the dryer stack to measure radionuclide emissions.

Action: No action required.

16.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: General Page #: n/a Line #: n/a Code: C
Original Comment #:
Comment: The OU1 remediation will include the interim storage of radium bearing wastes, as well as, removing the covers from radium bearing wastes in the pits. It will probably be impracticle to demonstrate that radon emissions are less than the 20 $pCi/M^2/sec$ limit (DOE 5400.5, 40 CFR 61 Subpart Q). What methods will be employed determine radon

flux from the waste pits after the covers have been removed? Portions of the waste pits emit radon in excess of the limit with the earthen cover in place.

Response: 40 CFR 61, Subpart Q limits the radon flux from interim storage or disposal of radium bearing materials to 20 $pCi/M^2/sec$ on an average over the entire source. The radon flux from all of the waste pits was determined in 1992 to be below the Subpart Q standard. As described in the Design Criteria Document, Appendix B, the 40 CFR 61 Subpart Q standard will continue to be applied to the unexcavated portions of the waste pits. It is expected that flux from the unexcavated portions of the pits will continue to be well below the NESHAP Subpart Q standard.

As described in the Design Criteria Document, Appendix B and in the Excavation Plan, Section 5, the portions of the waste pits being actively excavated as well as 'in process' storage piles of excavated waste materials, will be treated as fugitive emission sources; radon emissions will be limited through application of Best Available Technology (BAT) control measures. These BAT measures are described in detail in Section 5 and Appendix B of the Design Criteria Document. Data collected through the Fernald Site Environmental Monitoring Program will be continuously reviewed to assure that higher-than-anticipated impact of radon emissions from these fugitive sources is identified.

Action: A detailed description of the regulatory strategy used as a basis for limiting radon emissions associated with implementation of the Operable Unit 1 remedial action has been added to the Design Criteria Document, Appendix B. Tables A-2 and B-1, have been revised to clarify the plans for implementation of these requirements. The Excavation Plan, Section 6, Air Monitoring Program has been clarified to describe monitoring of radon emissions. Section 6 of the Excavation Plan and Appendices A and B of the Design Criteria Document are included as an attachment to this RTC document.

17.) Commenting Organization: Ohio EPA Commentor: ODH
Section #: GENERAL Page #: Line #: Code: C
Original Comment #:
Comment: Will the analytical screenings of OU1 soil/debris which may enter the onsite disposal cell include Technetium-99? Due to it's environmental mobility, the potential addition should be included in the current value of the WAC of Tc for onsite disposal.

Response: Agree. No efforts will be made to place any debris from the OU1 waste pit processing activities in the OSDF. Soils which meet the OSDF WAC, which includes Tc-99, will be disposed of in the OSDF.

Action: No action required.

18.) Commenting Organization: Ohio EPA Commentor: ODH
Section #: GENERAL Page #: Line #: Code: C
Original Comment #:
Comment: The text states field measurements for radon at feed prep, blending, and loadout areas will be taken initially during operations to verify modeling results. Is there sufficient confidence in the waste characterization in the pits to limit the radon tests to this initial period?

Response: Yes. Dispersion modeling of estimated point source (dryer stack) and fugitive (excavation, feed prep, blending and loadout areas) emissions was conducted to quantify the potential offsite impact of these emissions, and to provide a basis for control and monitoring requirements. This modeling showed the estimated total impact of fugitive emissions and point source emissions to result in a potential dose to the public less than 1 mrem/year for either particulate or radon. As is described in the Excavation Plan Section 6, Air Monitoring Program, data from the Fernald Site Environmental Monitoring Program will be reviewed on a continuing basis throughout OU1 remedial activities to assure that any higher-than-anticipated impact of radon emissions from these fugitive sources is identified.

Action: The Excavation Plan, Section 6, has been clarified to describe monitoring of radon emissions. The revised pages are included in the attachment to this RTC document.

19.) Commenting Organization: Ohio EPA Commentor: ODH
Section #: GENERAL Page #: Line #: Code: C
Original Comment #:
Comment: To enhance confidence in the waste analytical data and avoid shipment of non-acceptable wastes, will the FEMP's confirmatory analysis be coordinated with the independent third party analysis prior to shipment of waste offsite? The text references the Sampling and Analysis Plan for additional detail. Please define within the text when this plan will be submitted for review.

Response: The FEMPs confirmatory analysis will be coordinated with the ARASA contractor analyses prior to shipment off site. The Sampling and Analysis Plan (SAP) is a remedial action deliverable and will be submitted in accordance with schedules approved under the OU1 Remedial Action Work Plan (RAWP). The SAP will be developed by the PCDF, in conjunction with the ARASA contractor, to ensure that the as-loaded materials meet the PCDF's WAC. The RAWP will be submitted to the EPAs on or before October 22, 1996.

Action: No action required.

20.) Commenting Organization: Ohio EPA Commentor: DSW
Section #: GENERAL Page #: Line #: Code: C
Original Comment #:
Comment: The Ohio EPA needs more detail on stormwater management and erosion controls, e.g. surface water flow, direction, drainage areas, volumes, silt fence locations, etc. For example, the drawings indicate the flow of surface water from south pit #4 towards the depression with the "control box" west of the biodenitrification lagoon. However, it is unclear where water east of pit #4 flows and the source and drainage area for the water that flows into the SWM pond.

Response: Comment Acknowledged. Additional information on stormwater controls was provided in Revision 1 of the Certified for Construction (CFC) drawings for the Operable Unit 1 (OU1) Site Preparation activity submitted to Ohio EPA on April 22, 1996. Among other things, these revised drawings depicted the location of erosion and sedimentation controls for the project including silt fence, checkdams, and the stormwater retention basins. Runoff from the area south of Waste Pit 4 will flow toward the depression with the "control box" west of the biodenitrification lagoon as it presently does inside of the

waste pits' SWM system. Runoff from the area east of Waste Pit 4 will flow to the west and will be collected in the stormwater retention basins that are being installed under the Site Preparation Project. The stormwater retention basins will also collect runoff from the vicinity of the dryer facility once it has been constructed in the Waste Pit Area.

Action: During the life of the project, sedimentation and erosion control devices will be inspected on a weekly basis in accordance with the Fernald Site Stormwater Pollution Prevention Plan.

21.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: GENERAL Page #: Line #: Code: C
Original Comment #:

Comment: DOE and FERMCO needs to ensure that a plan is in place prior to OU1 remedial actions that will prevent sediment loading to Paddys Run which could potentially effect the Sloans Crayfish habitat. This plan will ensure prevention of impacts to the Paddys Run habitat, vs. mitigating damages which may occur after OU1 remediation.

Response: Agree. Please reference "Response to USEPA and Ohio EPA Comments, Operable Unit 1 Remedial Design Preliminary Design Packages I and II, October 1995, Ohio EPA comment response number 1.

Based on the original comment referenced above, the discharge from the SWM pond was rerouted to pass through and additional retention area. The OU1 stormwater management (SWM) system is being constructed consistent with the site-wide FEMP SWPPP. This SWM system will support all OU1 remediation facilities. In addition to the SWM system's silt retention capabilities, other erosion control practices identified in the FEMP SWPPP will be implemented.

Action: No action required.

22.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 2.2 Page #: 2-20 Line #: 4-5 Code: C
Original Comment #:

Comment: The maximum off-site impact of 0.5 pCi/L annual average for radon is stated as a determinant for a stack limit for radon emissions. Appendix D states a radon emission limit of 2×10^8 pCi/sec, apparently based on the 0.5 pCi/L impact. This limit, based on the design criteria, would indicate an excessive flux rate. Employing BAT and ALARA principals would include radon treatment in the off-gas system.

Environmental measurements of radon at the FEMP fenceline will not be able to demonstrate an annual average radon concentration of 0.5 pCi/L attributable to the dryer off-gas, especially with the presence of other high radon sources on the site. The dryer off-gas should limit the Rn-222 emissions to the atmosphere to 20 pCi/m^2/sec.

Response: The 0.5 pCi/l annual average limit at the site boundary was used to establish the 2×10^8 pCi/sec stack limit for the dryer using EPA-approved dispersion modeling.

It is agreed that, in the presence of other radon sources at the FEMP, it would not be possible to demonstrate compliance with the 0.5 pCi/l impact from the dryer stack through the use of ambient radon measurements. Compliance with the 0.5 pCi/l limit

will be demonstrated through continuous monitoring of emissions from the stack and comparison of these measured emissions to the stack limit described above.

The radon emission rate from the dryer stack based upon a 'worst case' feed material, assuming no control equipment, has been estimated to be less than 35,000 pCi/sec or 0.02 % of the stack limit.

Control of radon emissions, including application of Best Available Technology, is described in detail in the Design Criteria Document, Appendix B, Table B-1.

The 20 $pCi/m^2/sec$ flux limit is applied to sources of interim storage or disposal of radium bearing materials by 40 CFR 61 Subpart Q. This flux limit is not intended to be applied to active remediation activities, nor to point source emissions such as the dryer stack. Application of the flux limit to the waste pits is discussed in the response to Comment No. 16.

Action: A detailed description of the regulatory strategy used as a basis for limiting radon emissions associated with implementation of the Operable Unit 1 remedial action has been added to the Design Criteria Document, Appendix B. Tables A-2 and B-1, have been revised to clarify the plans for implementation of these requirements. The Excavation Plan, Section 6, Air Monitoring Program has been revised to clarify monitoring of radon emissions. Reference to the radon strategy in Appendix B has been added to Section 2.2 of the Excavation Plan. The revised Excavation Plan, Section 6, and Appendices A and B and revised pages for Section 2.2 of the Design Criteria Document are provided in the attachment to this RTC document.

23.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Appendix D Page #: D-1 Line #: n/a Code: C
Original Comment #:

Comment: It is unclear how these limits were derived. Typically, the maximum capacity of the process input (tons/hr) and the worst case concentration of the contaminant of concern are used to estimate off-gas emissions (uncontrolled release). The use of manufacturer removal efficiencies for each COC is then applied to demonstrate how BAT is used to minimize airborne emissions.

Please provide a table clearly illustrating how the "limits" in Appendix D were derived.

Response: In accordance with the OEPA Air Toxic Policy these stack limits were calculated based on the Maximum Acceptable Ground Level Concentration (MAGLC), at the site boundary. The ISCST air dispersion model was used to develop the stack limits based on the current design parameters of the dryer and the gaseous emission rates developed by PARSONS using the METSIM simulation software.

The OEPA Air Toxics Policy specifies that BAT must be applied to control any toxic with emissions in excess of the stack limit. As described in the Design Criteria Document Table B-1, emissions of all toxic pollutants with projected emissions above the stack limits derived from the Toxics Policy will be controlled through use of administrative controls or BAT. The design of the off-gas system for the dryer system includes a scrubber for control of these pollutants. Performance testing will be conducted during initial operation to verify the performance of these control measures.

Action: Two additional columns have been added to Appendix D which will include the highest expected emission rates and the MAGLC number for each compound. Reference to the performance testing has been added to Table B-1. Revised Appendices B and D are included in the attachment to this RTC document.

24.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Table A-2 Page #: A-9 Line #: n/a Code: C
Original Comment #:
Comment: Category: Radiation
TBC Requirements: DOE 5400.5 (DCGs). The DCGs do not comply with 40 CFR 61, Subpart H criterion of 10 mrem./yr CEDE. 40 CFR 61, Subpart H criterion are demonstrated through the use EPA approved models such as AIRDOS.

Compliance Strategy: The first paragraph of compliance strategy is not applicable. TLDs will not measure the EDE in the controlled area for ingested or inhaled radionuclides. Review of the referenced "Assessment of Radiological Hazards Associated with OU1 Remedial Design" indicates that doses to the public from OU1 activities will be approximately 1 mrem./yr. This requires continuous monitoring of this source. This continuous monitoring should include the dryer stack, for radionuclides of concern. The stack should be continuously sampled for isotopic thorium, isotopic uranium, isotopic radium and Rn-222. Stack emission limits, as well as limits for the entire project should be developed, including methods for determining/estimating emissions from the complete project.

Response: CAP-88 PC modeling of estimated radionuclide emissions from Operable Unit 1 remediation activities was conducted to determine requirements for compliance with 40 CFR 61 Subpart H.

As described in the response to Comment 15, continuous stack monitoring for radionuclides from the dryer stack will be performed to comply the requirements of 40 CFR 61 Subpart H.

40 CFR 61 Subpart H imposes a sitewide 10 mrem/year limit on the effective dose equivalent (EDE) to any offsite resident due to emissions of radionuclides (excluding radon) from all activities at the site. Compliance with this requirement is demonstrated, based upon modeling of measured and/or estimated actual emissions, in an annual report submitted to USEPA by June 30 each year. Measured emissions from the dryer stack, along with estimated fugitive emissions will be included in this report to demonstrate compliance with the 10 mrem/year standard.

The design for the dryer also includes continuous monitoring for radon emissions from the dryer stack.

The air emission limits imposed on Operable Unit 1 remediation activities by various state and federal regulations are identified in the Design Criteria Document, Appendix D.

Action: Tables A-2 and B-1 have been revised to clarify the plan for compliance with requirements of 40 CFR Part 61. Revised Appendices A and B of the Design Criteria Document, which include Tables A-2 and B-1, are included in the attachment to this RTC document.

25.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Table A-3 Page #: A-11 Line #: n/a Code: C, E
Original Comment #:

Comment: Category: Radon Applicable Requirements; 40 CFR 61, Subpart Q
The maximum off-site impact is 3 pCi/L annual average, not 5 pCi/m^2/sec. Prior measurements of the radon flux emanating from the waste pits indicate that this material has radium in sufficient quantities to exceed the 20 pCi/m^2/sec limit. According to this plan the earthen and/or man-made caps will be removed from the waste pits, allowing the radon to escape at higher rates. The wastes will also be stored on an interim basis prior to drying.

All sources of Radon-222 should be continuously monitored to demonstrate the assumptions made by modelers.

Note: 10 CFR 834 (Proposed Rule) places a maximum offsite limit of 0.5 pCi/L above background at the site boundary. This rule will probably be signed into law prior to the start-up of this project. Planning should include provisions to demonstrate compliance with this rule.

Response: As described in the responses to comments 16, 18, and 22, the dryer stack will be continuously monitored for radon to demonstrate compliance with a stack limit derived from a maximum annual average impact of 0.5 pCi/l above background at the facility boundary. Modeling of 'worst case' expected radon emissions from fugitive sources and point source emissions showed potential dose to the public to be less than 1 mrem/year. Data from the Fernald Site Environmental Monitoring Program will be evaluated on a continuing basis to assure that any higher-than-anticipated impact of radon emissions from fugitive sources are identified.

See also response to comment number 56.

Action: Table A-3 has been revised to clarify requirements and compliance plans for 40 CFR 61 Subpart Q. A detailed strategy for control of radon emissions is provided in Appendix B of the Design Criteria Document. Design Criteria Document, Appendices A and B are included in the attachment to this RTC document.

26.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Table A-3 Page #: A-13 Line #: n/a Code: C
Original Comment #:

Comment: Air Discharges, OAC 3745-21-07 Organics should be monitored in the off-gas stream to demonstrate compliance with State code.

Response: As discussed in the response to Comment 23, expected emissions of organics from the dryer stack have been compared to limits derived from the OEPA Air Toxics policy. Best Available Technology will be installed as required by the policy. Performance testing will be conducted to verify adequate control.

Action: No action required.

27.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Table A-3 Page #: A-13 Line #: n/a Code: C
Original Comment #:
Comment: Category: Air Discharges, OAC 3745-31-05 (A)(3) Permit to Install. This report does not adequately address BAT determination. See comment number 23.

Response: See response to Comment No. 23. Plans for meeting requirements for BAT, as well as all other substantive requirements of OAC 3745-31, are discussed in detail in the Design Criteria Document, Appendix B.

Action: Table A-3 has been revised to reference compliance plans described in Table B-1. Design Criteria Document revised Appendices A and B are included in the attachment to this RTC document.

DRAWINGS

28.) Commenting Organization: Ohio EPA Commentor: DSW
Section #: 91X-5900-G-00214 Page #: Line #: Code: C
Original Comment #:
Comment: Borrow area location and depth "to be determined", and Table B-4, page B-23 in the substantive permits crosswalk section states that depth should not go below 575 feet MSL. This maximum depth should be on the drawing. Also there is no provision for sediment trap/control on the drawing, proper sediment control must be included.

Response: Comment Acknowledged. The depth of the borrow pit will be limited to 575 feet (MSL) to avoid adverse impacts to the 26-acre northern forested wetland located directly to the north as described in Table B-4, page B-23 of the Design Criteria Document, Appendix B.

Action: Sedimentation and erosion control devices consisting of silt fence and checkdams have been installed along the western edge of the excavation to minimize sediment transport from the working face of the borrow pit. In addition, the base of the excavation will be sloped to divert stormwater runoff towards these control structures. Sedimentation and erosion control structures associated with the excavation will be inspected on a weekly basis in accordance with the Fernald Site Stormwater Pollution Prevention Plan.

29.) Commenting Organization: Ohio EPA Commentor: DSW
Section #: 91X-5900-G-00207 Page #: Line #: Code: C
Original Comment #:
Comment: The use of straw bales in check dams is not recommended.

Response: Comment acknowledged. Site preparation activities which included construction of check dams and installation of silt fencing have been completed. At OEPA's request, DOE used silt fences instead of straw bales at all feasible locations. Check dams were constructed with both straw bales and rip-rap. Consistent with the FEMP SWPPP, these areas will be monitored closely to ensure they are operating efficiently.

Action: No action required.

30.) Commenting Organization: Ohio EPA Commentor: DSW
Section #: 91X-5900-G-0014 Page #: Line #: Code: C
Original Comment #:
Comment: Silt fences are preferred over straw bales per "Rainwater and Land Development".

Response: Comment acknowledged. Site preparation activities which included construction of check dams and installation of silt fencing have been completed. At OEPA's request, DOE used silt fences instead of straw bales at all feasible locations. Check dams were constructed with both straw bales and rip-rap. Consistent with the FEMP SWPPP, these areas will be monitored closely to ensure they are operating efficiently.

Action: No action required.

Package II

31.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: General Page #: NA Line #: NA
Original Comment #:
Comment: The main body of the text is organized such that a significant portion of the quantitative data is located in the appendices. When referring to key decisions based on that data, please provide additional references when applicable (i.e., appendix number or page number on which the appropriate information can be found).

Response: Comment acknowledged. This Pre-final Design Package will be passed on to the ARASA contractor for his information; therefore, including additional references would not be beneficial and would require resources that could be better utilized elsewhere. Future remedial design/remedial action submittals will include detailed references to the appendices where appropriate.

Action: No action required.

32.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: General Page #: NA Line #: NA
Original Comment #:
Comment: The text contains several indefinite references. For example: "Consideration should be given to.....". The wording indicates a lack of control or involvement in the decision process. Please clarify.

Response: Comment acknowledged. However, such references add to the flexibility of the excavation process. As stated in the introduction to the Excavation Plan, the current preferred method of excavation is mechanical excavation, with hydraulic excavation being planned as a contingency. Due to the heterogeneity of the waste, the difficulty in estimating and predicting the waste strength properties, and excavated face slope stability, it is necessary to address situations that could potentially develop in the field and provide for a qualified, competent field engineer to make necessary operational adjustments.

Action: No action required.

33.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: General Page #: NA Line #: NA
Comment: The excavation plan contains many assumptions, which at times are conflicting and confusing. Each time a design assumption is made on the basis of available date and a specific action is planned, a contingency is provided for by stating that if the planned action does not work, then other actions may become necessary and will be decided or designed later. It is recognized that the overall excavation plan is complicated and all contingencies cannot be addressed; however, the plan appears to rely on many actions that will be designed later, and does not provide adequate alternatives. The main concern with this approach is that significant delays may occur in implementing the remedial action when new alternatives need to be designed. Please comment.

Response: Comment acknowledged. Due to the heterogeneity of the waste pits and based on the lessons learned from the DEEP project, maintaining a fixed schedule for the implementation of a defined mining plan could be accompanied by opportunities for delay resulting from the possibility of changed field conditions. The Excavation Plan identifies potential concerns and identifies field responses when such difficulties arise.

As presented in the Excavation Plan, primary reliance is placed upon conventional excavation equipment to conduct the excavation. Upon encounter of an area within the pits where the use of conventional equipment is infeasible, the excavation would shift to another area within the same pit or to another pit in order to continue the overall excavation. As a contingency, excavation of the waste pits by slurrying is also presented.

If, based on experience in conducting excavation, a significant portion of one or more pits is ascertained to be excavable only through slurry pumping, this equipment will be procured and installed. The pre-final design for the OU1 plant includes space for the future installation of slurry handling equipment.

However, given the current state of knowledge of the OU1 waste, there would be a very low probability of incurring a significant delay in the excavation due to the lack of alternative opportunities within the same pit or of another pit, for the application of conventional excavation.

Action: No action required.

34.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: General Page #: NA Line #: NA
Comment: The DEEP report suggests dewatering by well extraction would be an effective pre-excavation waste stabilization and minimization technique. However the text does not appear to incorporate a well dewatering strategy. Please clarify.

Response: Comment acknowledged. One phase of the DEEP treatability study, the Dewatering Phase, involved the installation of dewatering wells in the waste pits to determine the feasibility of installing dewatering wells and a water recovery system. The results of this investigation concluded that due to the large void space within the pits yet low permeability of the pit wastes, the installation of a dewatering system was not cost effective. Although the waste pits do contain significant amounts of large debris and void spaces, the fine grained nature of most of the waste is the overriding factor resulting in the generally low permeabilities. This is evidenced by the fact that the

dewatering wells consistently yielded low pumpage rates, on the order of less than 10 gallons per 24 hours of pumpage. It was thus concluded that control of pit water could best be handled by the installation of pumps as excavation progressed and water was encountered.

Also, it was concluded that water in the pits would assist with particulate control as the particles would have less exposure time for drying and subsequent windborne transport.

Action: No action required.

35.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 1-1 Page #: 1-1 Line #: 14-20
Comment: The top and bottom excavation method uses machinery placed on the soil cap. The soil cap does not strengthen the soil but effectively spreads out the load. How will the minimum cap thickness and extent be determined during excavation to maintain a stable working surface?

Response: Comment acknowledged. DOE does not think that pit cap stability and bearing capacity problems will be encountered during excavation. Waste pit cap thickness, while variable, is generally well documented from both RI and DEEP project well and boring installations. Also, as is explained in the Response to Comment #39, heavy equipment has been on the surface of Waste Pits 1,2, and 3 on numerous occasions in the past. As the cap is removed and waste is excavated, the cap support would be reduced; however, safe set-back distances for equipment working on the cap will be maintained. Historically the waste pit caps have not shown any propensity towards instability. Preliminary stability analyses using strength of Pits 1, 2, and 3 waste indicate cap stability, provided that 2.5:1, and in some cases 3:1, slopes be maintained during excavation.

It is not presently in the plans of DOE to perform additional field measurements of the cap to further define its thickness.

Action: No action required.

36.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 1-1 Page #: 1-1 Line #: 26-29
Comment: It is unclear how a combined mechanical and slurry removal strategy will be accomplished. It is anticipated that a combination of these techniques may be needed. If so, please describe how they will interact. In particular, please describe how the blending of wastes will be accomplished using the slurry removal technique.

Response: Comment acknowledged. The intent of the waste slurrying alternative was to prepare for the contingency that if a waste was encountered (for example, in Pit 5) which was amenable to slurrying, then DOE could perform slurrying as the most efficient removal method. See also response to comment #33.

Action: No action required.

37.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 1-2 Page #: 1-1 Line #: 25-38
Comment: The text states that the excavation to be conducted in Pits 1,2,4, and in the Burn Pit will be similar to that conducted in Pit 3. This statement appears to be contradictory because Pit 3 is a wet pit, which will most likely require hydraulic excavation. Pits 1,2,4, and the Burn Pit are dry pits where mechanical excavation is planned. This apparent contradiction was previously submitted as a comment, please indicate what portions of the text clarify this point.

Response: Comment acknowledged. While Pit 3 is classified as a wet pit, it was found during DEEP that, like Pits 1 and 2, it contained zones of relatively high amounts of water as well as zones which did not contain significant amounts of water, or zones which excavated dry, but were found to have small amounts of water in the excavations if left open overnight. This is due to the variability in the waste which was placed into the pits, how the waste was placed into the pits, and water migration created by an open excavation.

During the active life of the waste pits, all pits contained some amounts of liquid. Today, only Pits 5, 6, and the Clearwell are open and contain substantial volumes of visible water. All other pits have either clay caps with the exception of Pit 4, which has a cap composed of synthetic material. Making reference to a pit as being either "wet" or "dry" in no way implies that waste removal by hydraulic excavation may be a better option than area surface excavation. The pit wastes, particularly in Waste Pits 1, 2, 3, and 4, are quite heterogeneous both in waste variety and size. Simply generalizing that hydraulic excavation represents the preferred waste removal method is an over simplification of the nature of the problem.

Action: No action required.

38.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 2.2 Page #: 2-2 Line #: 17-20 Code: C
Original Comment #:
Comment: It is unclear whether additional study will be used to determine the validity of airborne emissions or additional study will be used to verify the control measures. Briefly state what methods will be used to control these emissions, and whether or not monitoring will be used to verify the control measures.

Response: Methods for control of radionuclide, radon, and toxic emissions are discussed in detail in the Design Criteria Document for the Operable Unit 1 Remediation System Design, Appendix B. Control of radon and radionuclide emissions from the dryer stack will be verified through continuous monitoring of the dryer stack. Control of toxic emissions will be verified through performance testing conducted during initial operation. Collection and review of data from the Fernald Site Environmental Monitoring Program will ensure that any higher-than--anticipated impact from fugitive emissions is identified.

Action: No action required.

39.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 2-2 Page #: 2-2 Line #: 9-15
Comment: The text states "it is assumed that the waste throughout the pit (and for other pits with overlying soil caps) has sufficient strength to maintain a workable and stable slope and that pit caps can support excavation equipment. Is test data available to confirm these assumptions? Please clarify.

Response: Comment acknowledged. During the DEEP treatability study, slope stability evaluations were performed to estimate what range of slopes would have to be maintained during excavation. During excavation, sidewall slopes will be maintained within this range.

Pits 1,2,3, and the Burn Pit have historically been subject to weight of vehicles which are either comparable to the weight of excavation equipment, or in many instances vehicles which exceed the weight of excavation equipment anticipated to be used during pit excavation. Past drilling and excavation investigations during performance of the RI and the DEEP, have demonstrated that the weight of drilling rigs, back hoes, and other support vehicles can be supported by the pit soil caps. Also, during the Site Characterization and Analysis Penetrometer System (SCAPS) investigation, the SCAPS vehicle, which weighed 20 tons, maneuvered on the pits' soil cap surface without becoming stuck. Also, visual observation has historically shown the presence of one low area (approximately 50 feet by 100 feet in size) near the southeast corner of Pit 2. Past waste pit activities have always avoided this area. Excavation will also temporarily avoid this area until such time as the area is ready to be mined through. By that time waste from adjacent locations will have been removed and the low area dewatered. Strength properties from Pits 1, 2, and 3 were determined in the laboratory as part of DEEP. See response to comment number 35.

Action: No action required.

40.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3 Page #: 3-1 Line #: 1-18
Comment: The proposed excavation sequences are listed. Were alternate sequences considered? What advantages does the current sequence have over other sequences? Please explain.

Response: Comment acknowledged. Alternate excavation strategies were evaluated. The excavation strategy selected offers the most reasonable excavation approach which incorporates entrance into the pits and makes available for removal the types of waste with which DOE wishes to commence processing activities.

Action: No action required.

41.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3 Page #: 3-1 Line #: 23-27
Comment: The sequence of pit excavations proceeds in several pits simultaneously. Material in Pit 2 is scheduled to be mixed with Pit 1 and 3 materials. How will delays in select pits effect the overall operation? Will delays in one pit cause excavations to be delayed or stopped in other pits? If stockpiling occurs what volume can be stockpiled before excavation is stopped or delayed?

Response: Comment acknowledged. Due to the heterogeneity of the waste pits and based on the lessons learned from the DEEP project, maintaining a fixed schedule for the implementation of a defined mining plan could be accompanied by opportunities for delay resulting from the possibility of changed field conditions. The Excavation Plan identifies potential concerns and identifies field responses when such difficulties arise (i.e., excavation at another source).

As presented in the Excavation Plan, primary reliance is placed upon conventional excavation equipment to conduct the excavation. Upon encounter of an area within the pits where the use of conventional equipment is infeasible, the excavation would shift to another area within the same pit or to another pit in order to continue the overall excavation. As a contingency, excavation of the waste pits by slurrying is also presented.

If, based on experience in conducting excavation, a significant portion of one or more pits is ascertained to be excavable only through slurry pumping, this equipment will be procured and installed. The pre-final design for the OU1 plant includes space for the future installation of slurry handling equipment.

However, given the current state of knowledge of the OU1 waste, there would be a very low probability of incurring a significant delay in the excavation due to the lack of alternative opportunities within the same pit or of another pit, for the application of conventional excavation.

Action: No action required.

42.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3 Page #: 3-3 Line #: 29-30 Code: C
Comment: It is stated that, "The exterior stockpile will normally be used for stockpiling wetter wastes that will drain over time". How long will the wetter wastes be stockpiled? Where does the drainage go?

Response: Comment acknowledged. Stockpiled waste will be temporarily stored until such time as it can be processed. This time period may vary, due to any number of reasons relating to excavation schedules, or operation and maintenance of the waste treatment, loadout systems. Stockpiled waste will be allowed to drain by gravity to remove that fraction of water which will freely drain under those conditions. Thus, the time of stockpiling of waste, depending on the pit of origin, may be a function of the waste moisture content as opposed to needing to store the waste for some operation and maintenance purpose. All surface drainage emanating from stockpiled waste material will be collected and diverted to a pre-treatment component, then to the site AWWT.

Action: No action required.

43.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.1 Page #: 4-3 Line #: 1-18 Code: E
Original Comment #:
Comment: The column indicating "Initial Moisture Content" should be identified as an average by footnoting the title of the column. A range of values for the moisture content would also be helpful in demonstrating that the moisture content of each waste pit is highly

variable.

Response: Comment acknowledged. Section 4.1, page 4-2, line 25 identifies that Table 4-1 reports the average initial moisture contents; and Table 3-1 of the Technical Summary of DEEP Test Data provides ranges for the moisture content data.

Action: No action required.

44.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.1.3 Page #: 4-5 Line #: 31 Code: E
Comment: There appears to be missing text at the end of this paragraph. Please verify and correct.

Response: Agree. The last sentence should state, "... provided excavation depths do not exceed about 15 feet, the material angle of repose is not exceeded, or the heterogeneity of the waste material does not impact the excavation's progress".

Action: If the DBO approached is resumed, the text in Excavation Plan will be revised to include the language provided above.

45.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 5.2 Page #: 5-2 Line #: 13-15
Comment: The explanation regarding the creation and use of sumps is vague. Please clarify in this section or reference the appropriate section.

Response: Agree. During excavation, low spots within the pits will be initially dug. Each low spot shall be graded such that the water flow direction is towards the low spot. Sumps and pump will be installed in the low spots. Depending on the rate of pit water inflow it may be necessary to operate the sump pumps continuously or on an as needed basis. Pumped water initially be pumped to either a water truck or designated holding tank adjacent to the excavation itself. As excavation progresses vertically and laterally, the sump low spot will be expanded, deepened, and, depending on the location and rate of pit water inflow, additional sump low spots may need to be excavated.

Action: No action required.

46.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 5.2 Page #: 5-2 Line #: 24-27
Original Comment #:
Comment: What approximate volumes of water are expected to be added to the waste (in the form of water sprays) as a precaution for the release of airborne radioactive contaminants?

Response: The quantity of water which will be sprayed on the waste to suppress dust will vary widely depending on the ambient temperature, relative humidity, and area of waste exposed. Detailed layout of sprinkler nozzles was not developed as a part of the DBO design prior to the decision to proceed with the ARASA concept.

Action: No action required.

47.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 5.2.2 Page #: 5-4 Line #: 6-14
Comment: What slope will be required to maintain the open trench? Please further explain the trenching or reference the appropriate section.

Response: It is anticipated that a minimum 2H:1V slope, and 3H:1V minimum at locations identified in the excavation plan, will be necessary. During Pit 5 sampling, some resistance to the sampling equipment was encountered. This, in combination with the moisture content and historical visual observations of the waste material when the pit water level was lowered, lead to the preliminary conclusion that the waste is fairly rigid and should possess sufficient strength to maintain an open trench.

Action: No action required.

48.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 5.2.3 Page #: 5-5 Line #: 24-27
Comment: It was suggested that approximately 3 feet of soil below the pit waste liners be excavated. Please reference the data used to make this assumption.

Response: The approximately 3 feet figure, first presented in the FS in February 1994, is the amount of material planned for removal once excavation of the pits has been completed. Project costing assumptions are necessary for volumetric and schedule, and work scope calculations. At the time of the RI/FS preparation 3 feet was selected as the basis for those calculations. The actual amount of soils to be removed from below the pits will be determined through sampling once the soils are accessed, with soil removal reflecting attainment of FRLs. Confirmation sampling, and any additional activities required to confirm FRLs have been met, will be conducted consistent with the OU5 sitewide excavation plan and subsequent area-specific sampling plans.

Action: No action required.

49.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 5.4 Page #: 5-6 Line #: 11-15
Comment: It is unclear whether equipment excavating the soil cap has supplied air, enclosed cabs, and filter cakes. Please clarify.

Response: All excavation equipment discussed in the pre-final package was fitted with enclosed cabs, including supplied air. As to the potential need for filter cakes, DOE is unfamiliar with this terminology as it applies to excavation equipment cabs.

Action: No action required.

50.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 5.4.5 Page #: 5-7 Line #: 24-25
Comment: The explanation on the use of a slurry for hydraulic excavation is vague. Please add additional text or reference the appropriate section.

Response: Comment acknowledged. Please also see the response to question #33. One phase of the DEEP treatability study investigated slurrying of the waste as an excavation option. However, based on the waste pit locations which were part of DEEP, slurrying was tentatively eliminated as a viable option. This does not, however, rule out the possibility that zones of pit waste may be encountered during excavation which are amenable to slurrying. Utilization of slurrying as an excavation method clearly presents logistical difficulties. DOE has prepared for this contingency. A slurry pump and the associated hoses and power supply, are on hand. Also, holding tanks of sufficient capacity and material strength to hold slurried waste are on hand. Should slurrying be determined the most efficient means of excavation, changing excavation operations to slurrying can be accomplished with minimal impact to the project schedule.

Action: No action required.

51.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 5.4.3 Page #: 5-7 Line #: 7-12
Comment: What contingencies are built into the excavation schedule? What is the minimum and average expected excavation rates?

Response: Excavation, processing, and loadout rates are directly related to the amount of funding received for a given fiscal year. Based upon the current funding projections, annual excavation rates (for full operational years) vary between 96,000 to 171,000 cubic yards.

DOE has two contingencies built into excavation operations for the waste pits to assure all stakeholders that remedial operations will proceed at the above specified rates. Below is a discussion of each of these contingencies.

Shift contingency: Based upon the existing design, drying operations will be the capacity limiting step in OU1 remedial operations. Excavation operations are currently only planned for 1 shift/day to provide the dryer (operating 3 shifts/day) with the specified annual production rates. If excavation is found to be proceeding more slowly than anticipated, an additional shift will be added to make up for the less than anticipated excavation productivity.

Slurry contingency: DOE anticipates most, if not all, of the waste pits will be mechanically excavated. If areas of the waste pits are encountered that cannot be mechanically excavated, mechanical excavation will proceed in other areas of the waste pits while slurry equipment setup and operation proceeds in these trouble areas.

Action: No action required.

52.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 5.6.2 Page #: 5-10 Line #: 1-3
Original Comment #:
Comment: Please clarify who and what criteria will be used to make the decision.

Response: Comment acknowledged. Section 5.6.2, page 5-9, lines 30-33 state, "Qualified field personnel, knowledgeable about soil analysis and predictable hazards in excavation work, ultimately will determine the safe setback distance and stable slope to maintain.

As with any excavation operation, the rules and regulations of OSHA 29 CFR, Part 1926, Subpart P, "Excavations," will be followed.

Action: No action required.

53.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 5.6.3 Page #: 5-10 Line #: 11-36 Code: C
Original Comment #:
Comment: This section does not address Rn-222 or Rn-220 emissions during the excavation of pit wastes. Radon concentrations will increase during relatively calm days or days during atmospheric inversions. How will radon emissions be controlled?

Response: Control of radon emissions is discussed in detail in the Design Criteria Document, Appendix B and in the responses to comment numbers 16, 18, and 22.

Action: No action required. A revised Design Criteria Document, Appendix B is included in the attachment to this RTC document.

54.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 6.1 Page #: 6-1 Line #: n/a Code: C
Original Comment #:
Comment: The Air Monitoring Program should separated into two sections; one for occupational air monitoring, and one for environmental air monitoring. The 90% Design should include the project specific air monitoring program. Air monitoring activities should begin six months prior to excavation activities to determine the project specific "background" levels/concentrations.

Response: Continuous monitoring of the dryer stack will be performed to verify adequate control of radionuclide and radon emissions. Data from the Fernald Site Environmental Monitoring program, which includes air monitors in the Waste Pit Area, at the FEMP fenceline, and offsite, as well as continuous radon monitors, will be used to identify any impact due to Operable Unit 1 remediation activities.

Action: The Excavation Plan, Section 6 has been revised to clarify discussion of both occupational and environmental air monitoring. The revised change pages are included in the attachment to this RTC document.

55.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 6.1 Page #: 6-1 Line #: 26-38 Code: C
Original Comment #:
Comment: The Assessment of Radiological Hazards Associated with the OU1 Remedial Design indicates that dose rates will be approximately 1 mrem./yr. This design should therefore include the plans for a supplemental environmental ambient air monitoring program including radon.

Response: Continuous stack monitoring for radionuclides from the dryer stack will be performed to comply with the requirements of 40 CFR 61 Subpart H. The design for the Operable Unit 1 remediation system also includes continuous monitoring for radon emissions from the dryer stack. Data from the Fernald Site Environmental Monitoring Program, which

includes air monitors in the Waste Pit Area, at the FEMP fenceline, and offsite, as well as continuous radon monitors, will be used to identify any impact from Operable Unit 1 remediation activities.

Action: The Excavation Plan, Section 6 has been revised to clarify current plans for project specific monitoring. The revised change pages are included in the attachment to this RTC document.

56.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 6.1 Page #: 6-1 Line #: 23-24 Code: C
Original Comment #:
Comment: The requirements of 10 CFR 834 (Proposed Rule) should also be included. It is likely that this rule will become effective during the OU1 remediation.

Response: Disagree. As stated in the March 8, 1990, Federal Register, "Once a ROD is signed and a remedy chosen, EPA will not reopen that decision unless the new or modified requirement calls into question the protectiveness of the selected remedy. EPA believes that it is necessary to 'freeze ARARs' when the ROD is signed rather than at initiation of remedial action because continually changing remedies to accommodate new or modified requirements would, as several commenters noted, disrupt CERCLA cleanups, whether the remedy is in design, construction, or in remedial action." In addition, the pertinent requirements of DOE Order 5400.5 (which would be codified under 10 CFR 834) were included as TBCs for OU1 remedial actions.

Action: No action required.

57.) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: App. C Page #: C-25 Line #: NA
Original Comment #:
Comment: The calculation of Qi in equation 2 appears to contain an error. Please clarify.

Response: Disagree. The calculation is correct. The volume flow into the trench (Qi, cu ft/min) equals the volumetric flux at the trench face (q, gpm/sq ft) times the area of the face over which the flux is occurring (2T(L+W), sq ft) times a scale factor (.1337) to convert gallons to cubic feet.

Action: No action required.

CHANGE PAGES

REVISED APPENDIX B OF DESIGN CRITERIA DOCUMENT

Appendix B
Operable Unit 1 - Substantive Permit Crosswalk

B.1.0 INTRODUCTION

The Operable Unit 1 (OU1) Record of Decision (ROD) established thermal drying and the subsequent off-site disposal of OU1 wastes at a permitted commercial disposal facility (PCDF) as the selected remedy for the OU1 remedial action. The OU1 ROD also established Applicable and Relevant and Appropriate Requirements (ARARs) that must be followed to ensure that OU1 remedial activities are conducted in compliance with the substantive requirements of existing federal, state, and local environmental laws and regulations.

OU1 remedial activities are regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986. Section 121(e) of CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 Code of Federal Regulations (CFR) Part 300 specifies that on-site remedial actions are exempt from the requirement to obtain formal permit approval, provided these actions are conducted in compliance with the substantive requirements of applicable and/or relevant and appropriate Federal, state and local environmental permits and regulations.

To comply with these CERCLA- and NCP-driven requirements, the United States Department of Energy (DOE) is required to provide the United States Environmental Protection Agency (US EPA) and the Ohio Environmental Protection Agency (Ohio EPA) with information demonstrating how remedial activities will comply with substantive permitting and ARAR-driven requirements associated with the selected remedy for each operable unit at the Fernald site. The DOE has committed to providing this information as part of the Remedial Design Work Plans currently being prepared for the various operable units. The DOE has further committed to providing this information in the form of Permitting and ARAR Crosswalk Tables, in which all substantive permit and ARAR-related requirements are identified along with a description of where in the design package the particular requirement is specifically addressed. A final demonstration of ARAR and substantive permitting compliance will be provided for each operable unit in their corresponding Remedial Action Work Plan submittals.

This appendix provides an overview of specific substantive permitting and ARAR-driven requirements associated with the OU1 remedial action. Tables B-1 through B-4 of this appendix provide a detailed listing of substantive permitting requirements associated with the OU1 remedial action and references the specific sections of the design submittals where additional information on the substantive requirements are addressed. Additional ARARs associated with the OU1 remedial action that are not related to the issuance of a specific permit and references to the sections of the design submittals where additional information on compliance with these requirements can be found are discussed in Appendix A.

B.2.0 SUBSTANTIVE PERMITTING REQUIREMENTS FOR AIR CONTAMINANT SOURCES

B.2.1 Applicability of Air Permit Program

The OU1 remedial action consists of the excavation and thermal drying of material contained in Waste Pits 1-6, the Clearwell, and Burn Pit. As a result of these activities numerous sources of fugitive and point source emissions of air contaminants will arise. These sources are subject to the provisions of existing Federal and state air control laws.

B.2.2 Substantive Air Permitting Requirements Associated with the OU1 Selected Remedy

Under the federally enforced National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart H Standard promulgated in 40 CFR Part 61, Subpart H, radiological emissions from all sources at the site are limited to an annual effective dose equivalent of 10 mrem per year. Pursuant to the NESHAP Subpart H standard, emission estimates must be prepared for fugitive and point-source air emissions associated with the OU1 remedial action to demonstrate compliance with the 10 mrem/year standard. Each potential air emissions point source must be evaluated (by modeling) prior to placement to determine permitting and monitoring requirements. Specifically, point sources with the potential for releases that could exceed a 0.1 mrem/year dose to any member of the general public on an uncontrolled basis must be continuously monitored. In addition, a notice of project completion for sources that exceed a 0.1 mrem/year dose to any member of the general public on a controlled basis is required.

In addition to the Federal requirements described above, the substantive permitting requirements of Ohio EPA's permit to install (Ohio Administrative Code [OAC] 3745-31) and permit to operate (OAC 3745-35) rules are applicable to air contaminant sources associated with the OU1 remedial action. The use of Best Available Technology (BAT) to control air emissions is included under these requirements.

B.2.3 Policy for Control of Radon Emissions

This section presents the strategy that will be used as the basis for limiting radon emissions generated during Waste Pit Remediation Project (WPRP) activities. This strategy addresses controls required to meet environmental regulatory requirements; evaluation of occupational radiological requirements may impose operational restrictions or other measures over and above those addressed here. Three distinct types of radon emission sources during remedial activities for the WPRP are:

1) point source- dryer stack(s)

2) Waste Pits (which includes the Burn Pit and the Clearwell)

3) excavated waste materials and working piles

1) Point Source- Dryer Stack(s)

Radon emissions from the dryer or any other stack/point sources will be controlled so that radon emissions from each point source results in a maximum allowable off-site impact of 0.5 pCi/l annual average above background. This limit is based on 40 CFR 192, Subpart A, "Standards for the Control of Residual Radioactive Materials from Inactive Uranium Processing Sites". Although this limit is not directly applicable to the point source(s) in question, it is being identified as a relevant and appropriate limit. Therefore, the 0.5 pCi/l annual average limit at the site boundary was used to establish a stack limit for the dryer (and any other stack or point sources) using EPA-approved dispersion modeling. Compliance with the 0.5 pCi/l limit will be demonstrated through continuous monitoring of emissions from the stack and comparison of these measured emissions to the stack limit described above. The radon stack limit corresponding to an annual average impact of 0.5 pCi/l above background for the dryer stack is presented, along with limits and potential emissions of other expected pollutants, in Appendix D.

Based on the current design of the dryer, modeling of anticipated radon emissions from the dryer stack indicates that maximum radon concentrations due to emissions from the dryer stack will be well below the 0.5 pCi/l limit at the site boundary. Therefore, no control equipment or administrative controls will be necessary to maintain compliance with environmental regulatory requirements so long as the operation of the dryer remains within the parameters of the current design. To verify that the stack limit will not be exceeded during the operation of the dryer, a continuous radon monitor shall be installed in the stack.

2) Waste Pits

Unexcavated portions of the Waste Pits are considered interim storage sources and will be subjected to the NESHAP Subpart Q standard of 20 pCi/m^2/sec radon flux rate, calculated as an average for the entire source - in this case the entire waste pit in question. The radon flux rate from the unexcavated parts of Waste Pits 1, 2, 3, and 4 were measured in 1992 per 40 CFR 61 Appendix B, Method 115 and were below the NESHAP Subpart Q standard. In accordance with Method 115, The radon flux from the Clearwell and Waste Pit 5 can be assumed to be zero without measurement because these areas are covered with water. No radon flux measurements were necessary from Waste Pit 6 and the Burn Pit because these pits do not contain a sufficient quantity of radium-226.

Once excavation of a pit begins, the portion of the pit being excavated will be treated as an intermittent fugitive emission source; radon emissions will be minimized through the use of BAT controls as described below for excavated waste materials and working piles. BAT controls can be either applying water spray, a dust suppressant, or a tarp over the exposed areas or building a ventilated temporary structure

with controls over the exposed areas. These measures are described in greater detail in Table B-1, and in the Waste Excavation Plan for the OU1 Remediation System Design Section 5.0.

3) Excavated Waste Materials and Working Piles

Excavated waste materials and working piles include the active, or 'working face' excavation during pit excavation, materials in the process of being excavated from the Waste Pits, accumulated during processing, transported by equipment, loaded into railcars, crushed, blended, or fed into the dryer. Radon emissions from these materials and working piles are treated as intermittent fugitive sources and will be controlled by implementing BAT with no numerical emission rate limit. Potential BAT controls could include applying water or a dust suppressant over the residues, or work practices to minimize handling, disturbances or time exposed. For working piles with extended retention times such as the contingency storage piles, more stringent BAT techniques may need to be implemented such as covering the piles with a tarp or building a ventilated temporary structure with controls over the piles. Again, BAT to control radon emissions from such a structure would be satisfied by including carbon beds with the ventilation system.

B.2.4 Compliance Demonstration

Radiological sources associated with the OU1 remedial action will be evaluated against the substantive requirements of the NESHAP Subpart H Standard. Continuous monitoring and fugitive emission estimates will be used to measure off-site receptor doses. New sources of air contaminates or modifications to existing sources of air contaminants associated with the OU1 remedial action have been reviewed against the substantive provisions of the Ohio EPA's permit to install and permit to operate rules promulgated in OAC 3745-31 and OAC 3745-35. The need for specific pollution control equipment has been determined on a case-by-case basis such that it complies with the Ohio EPA's BAT requirements for mitigating air contaminant emissions. Specific substantive permitting requirements for air contaminant sources associated with the OU1 remedial action are listed in Table B-1 of this Appendix.

B.3.0 SUBSTANTIVE PERMITTING REQUIREMENTS FOR WASTEWATER AND STORMWATER DISCHARGES

B.3.1 Applicability of NPDES Permit Program

Section 402 of the Clean Water Act (CWA) establishes the National Pollutant Discharge Elimination System (NPDES) permit program. The program is implemented in accordance with regulations promulgated in 40 CFR Part 122 through 136 which regulate the point source discharge of wastewater to waters of the United States through the issuance of NPDES permits. NPDES permits are designed to

specify discharge limitations necessary to comply with applicable technology-based effluent standards and/or water quality-based standards. NPDES permits typically include monitoring requirements and additional conditions regulating point source discharges. Discharges of stormwater from specific types of activities have also been included under the NPDES permit program. Authority for administering the NPDES permit program within the State of Ohio has been delegated to the Ohio EPA.

B.3.2 NPDES Permitting Requirements

The DOE, the US EPA, and Ohio EPA have agreed that off-site discharges of process wastewater and stormwater generated during the course of the CERCLA remedial actions will be subject to compliance with both the substantive and administrative provisions of the Ohio EPA's NPDES permit program. OU1 discharges will be treated within the Fernald Environmental Management Project (FEMP) wastewater treatment system prior to discharge to the Great Miami River. Surge capacity and primary settling of OU1 wastewaters will be provided at the Biodenitrification Surge Lagoon. Final treatment of OU1 process wastewaters will be provided at the Advanced Wastewater Treatment facility (AWWT). Process wastewaters will be produced during initial de-watering of Waste Pits 5, 6 and the Clearwell, waste excavation and handling operations, and dryer operations. Stormwater runoff currently being collected in the waste pit area will also continue to be processed through the existing wastewater treatment system via the waste pit stormwater collection system.

A new industrial stormwater outfall to Paddy's Run Creek will also be established during implementation of the OU1 remedial action. Discharges from this outfall will be comprised of overflows from the new stormwater management basin that will be used to collect stormwater runoff for the waste processing area. Establishment of this outfall constitutes a new point source discharge of industrial stormwater, and as such is subject to the provisions of the Ohio EPA's NPDES permit program.

Current operating plans also call for processing standing water from Pits 5 and 6 through the Clearwell during the initial dewatering of these pits prior to excavation. Under the 1987 Director's Findings and Orders, use of the Clearwell in this manner was prohibited; however, the DOE has requested and approval has been received from the Ohio EPA by letter of March 1, 1996, to use the Clearwell for the proposed remediation activities.

Process wastewater and stormwater discharges associated with the OU1 remedial action will be treated at the AWWT to ensure compliance with the terms and conditions of the existing NPDES permit. By permit condition, the DOE is required to notify the Ohio EPA of any activities or changes at the site which have the potential to significantly alter the character of the wastewater streams being discharged under its existing NPDES permit. A NPDES permit modification is required if the discharge is deemed significant enough to cause a change in the character of the wastewater stream. The DOE has evaluated process wastewater discharges associated with the OU1 remedial action and has determined that they are of significant nature to warrant an NPDES permit modification. The existing FEMP NPDES permit will

be updated through the normal modification and/or renewal processes to reflect process wastewater discharges associated with the OU1 remedial action. The existing NPDES permit will also be modified to reflect the addition of the new industrial stormwater outfall to Paddy's Run Creek. Construction related stormwater runoff will continue to be managed in accordance with the requirements of the existing FEMP NPDES permit and Stormwater Pollution Prevention Plan.

B.3.3 Compliance Demonstration

The DOE, US EPA, and Ohio EPA have agreed that off-site wastewater discharges associated with the AWWT, and any other point-source wastewater or stormwater discharges to the Great Miami River or Paddys Run Creek will continue to be permitted through the NPDES modification and renewal processes. In order to comply with the requirements of this agreement, the existing FEMP NPDES permit will be renewed and/or modified to reflect process wastewater and stormwater discharges associated with the OU1 remedial action. Table B-2 of this Appendix documents NPDES related permitting requirements associated with the OU1 remedial action.

B.4.0 SUBSTANTIVE RCRA PERMITTING REQUIREMENTS

B.4.1 Applicability of RCRA Permit Program

Subtitle C of Resource Conservation and Recovery Act (RCRA) requires all hazardous waste treatment, storage, or disposal facilities (TSDs) to obtain RCRA Part A and B permits. The Part A permit includes basic information about the TSD facility, such as its name, location, and types of activities performed at the facility. Part B permits require detailed information about the TSD facilities including the types of wastes to be handled, groundwater monitoring plans, and facility design information. These permit requirements are established in 40 CFR Part 270 and reflect the requirements of 40 CFR Part 264. The administration of the RCRA permitting process has been delegated to the Ohio EPA in the State of Ohio. The general state implemented RCRA permit requirements are equivalent to the Federal RCRA permitting requirements promulgated in OAC 3745-50.

B.4.2 Substantive RCRA Permitting Requirements Associated with the OU1 Selected Remedy

The FEMP submitted a RCRA Part B Permit Application to the Ohio EPA in October 1991 in accordance with its stipulated amended Consent Decree with the Ohio EPA. Therefore, the substantive permitting requirements mandated under the RCRA Part B permit are applicable to remedial actions conducted at the site that involve the treatment, storage, and disposal of hazardous wastes.

Of the Clearwell, Burn Pit, and six waste pits located within the OU1 boundary, only Waste Pits 4 and 5 are currently listed as hazardous waste management units. However, analytical testing of material from these pits does not support the position that pit wastes are hazardous under existing RCRA regulations, nor does it indicate the presence of RCRA characteristic wastes throughout the remaining waste pits. Regardless, waste pit material must be characterized prior to shipment off-site. In the event RCRA characteristic wastes are identified, they must be managed in accordance with RCRA ARARs.

In addition, the *Draft Director's Findings and Orders* between the Ohio EPA and the DOE specify that demonstration of compliance with the substantive closure and post-closure requirements for hazardous waste management units will be documented in the remedial design and remedial action deliverables. The manner in which the OU1 remedial action will achieve compliance with these requirements is documented in this DCD.

B.4.3 Compliance Demonstration

Excavation, size reduction, homogenization, blending, and drying of OU1 pit wastes will be conducted to produce a single wastestream that will subsequently be shipped off-site for disposal at a PCDF. Prior to shipment off-site, wastes will be analyzed to determine if they meet the PCDF's waste acceptance criteria. If, during waste acceptance criteria testing, RCRA characteristic wastes are identified, the waste will be packaged and shipped to a low-level disposal facility that is also capable of treating and disposing of these types of RCRA wastes. The off-site shipment of RCRA wastes will be conducted in accordance with Department of Transportation and RCRA requirements.

Substantive RCRA permitting requirements and hazardous waste management unit closure and post-closure requirements associated with the OU1 remedial action are addressed in Table B-3 of this Appendix. Table B-3 also provides reference to the sections of the DCD where additional detail on this requirements can be found.

B.5.0 SUBSTANTIVE PERMITTING REQUIREMENTS ASSOCIATED WITH DISCHARGES OF DREDGED AND FILL MATERIAL INTO WETLANDS AND WATERS OF THE UNITED STATES

B.5.1 Applicability of Clean Water Act Section 404 and 401 Wetland Permit Programs

Pursuant to Section 404 of the CWA, any activity that results in the discharge of dredge or fill material into waters of the United States, including wetlands requires permit authorization by the United States Army Corps of Engineers (ACOE). The ACOE authorizes dredge and fill activities within wetlands and other waters of the United States through the issuance of permits under its Nationwide or Individual

Permit Programs (33 CFR Parts 330 and 323, respectively). In instances where discharges of dredge and fill material are associated with CERCLA removal and remedial actions, the ACOE has delegated responsibility for ensuring discharges are conducted in accordance with Sections 404 and 401 of the CWA to the US EPA.

In addition to the federally enforceable permitting requirements mandated under Section 404 of the CWA, individual States are delegated responsibility for ensuring discharges of dredged or fill material conducted within their borders comply with the requirements of Section 401 of the CWA. In Ohio, the Section 401 State Water Quality Certification program is administered by the Ohio EPA pursuant to OAC 3745-32.

B.5.2 Substantive Permitting Requirements Associated with the OU1 Selected Remedy

Impacts to wetlands and waters of the United States were considered during selection of the OU1 selected remedy as documented in the OU1 ROD. Although the DOE has avoided and minimized wetland impacts to the maximum extent practicable during its remedial design efforts, approximately 4.96 acres of headwaters and isolated jurisdictional wetlands will be dredged and/or filled as a result of the OU1 remedial action. Because the OU1 remedial action will result in the dredging and filling of these jurisdictional wetlands, the substantive permitting requirements mandated under the implementing regulations of the CWA Section 404 and 401 permit programs are applicable to the OU1 remedial action.

Based upon review of ACOE Nationwide Permits promulgated in Appendix A to 33 CFR Part 330, the DOE has determined that impacts associated with the OU1 remedial action meet the substantive terms and conditions of Nationwide Permit 26 - *"Headwaters and Isolated Waters Discharges"* and therefore, would have been authorized under this Nationwide Permit in absence of the CERCLA Section 121(e) exemption. The Ohio EPA granted its corresponding Section 401 State Water Quality Certification for Nationwide Permit 26 on January 17, 1992.

The specific terms and conditions of Nationwide Permit 26 that must be followed for discharges to be authorized under the Nationwide Permit are promulgated in Appendix A to 33 CFR Part 330. Of these, only those requirements which are deemed substantive in nature (i.e., non-administrative) are considered applicable to the OU1 remedial action. Substantive permitting requirements mandated under the Ohio EPA's corresponding Section 401 State Water Quality Certification are limited to restrictions on the acreage of dredge and fill activities and on discharges to special aquatic areas such as bogs and fens. The substantive permitting requirements of Nationwide Permit 26 and its corresponding Section 401 State Water Quality Certification that are applicable to the OU1 remedial action are presented in Table B-4.

B.5.3 Compliance Demonstration

The unavoidable 4.96 acre impact that will result from the OU1 remedial action will be conducted in accordance with the substantive requirements of Nationwide Permit 26 and its corresponding Section 401 State Water Quality Certification, including soil and erosion control and wetland mitigation. To avoid a piece-meal approach to mitigation, wetland impacts will be mitigated on a sitewide basis. Documentation addressing how specific mitigatory requirements will be addressed will be submitted pursuant to the schedule established in the Operable Unit 5 Remedial Design Work Plan. Additional information on the manner in which the OU1 remedial action will comply with substantive wetland permitting requirements has been incorporated in this DCD. Table B-4 relates these substantive permitting requirements to the specific sections of the DCD where compliance with the substantive permit requirements are addressed.

B.6.0 COMPLIANCE WITH NON-PERMIT RELATED ARARS

OU1 remedial actions must also comply with non-permit related ARARs established under existing Federal, state, and local environmental regulations. Tables describing the requirements of these ARARs and the manner in which the OU1 remedial action will comply with their requirements are included in Appendix A to this DCD.

Table B-1 - Substantive Permitting Requirements for Air Contaminant Sources

Citation	Substantive Permitting Requirements	Compliance Plan	Cross Reference Index
Substantive Air Permits - Dryer			
Permits to Install New Sources of Emissions OAC 3745-31-05(A)	The director shall issue a permit to install if he determines that the installation or modification and operation of an air contaminant source will: • Not prevent or interfere with the attainment or maintenance of applicable ambient air quality standards; • Not result in a violation of any applicable air pollution control laws; and • Employ best available technology to control emissions.	Permits to Install would be required for the fueling station, rotary dryer, and gas furnace in absence of the CERCLA 121(e) permitting exemption. These sources will be installed such that they do not interfere with the attainment or maintenance of any applicable air quality standards or cause a violation of applicable air control laws. BAT will be employed to control both point source and fugitive emissions associated with the project. BAT for particulate radionuclide emissions shall be HEPA Filtration with differential pressure gauge and low differential pressure alarm to be installed on the dryer off-gas system.	*Process Description for the Remediation System Design Section 4.0 and 5.0*
Particulate Matter Standards OAC 3745-17-07	Visible particulate emissions from any stack may exceed twenty percent opacity, as a six minute average, for not more than six consecutive minutes in any sixty minutes, but shall not exceed sixty percent opacity, as a six minute average, at any time.	BAT shall mean that visible emissions of particulate shall not exceed 0 percent opacity from the discharge stack of any control device associated with this source excluding water vapor. Based on the design of the dryer, HEPA filtration and a spray tower shall be installed on the off-gas system to remove particulate.	*Waste Excavation Plan for the OU1 Remediation System Design Section 5.0 and Process Description for the Remediation System Design Section 4.0 and 5.0*

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Table B-1 - Substantive Permitting Requirements for Air Contaminant Sources (Continued)

Citation	Substantive Permitting Requirements	Compliance Plan	Cross Reference Index
Substantive Air Permits - Dryer			
National Emission Standards for Hazardous Air Pollutants (NESHAP) - 40 CFR Part 61, Subpart H - Emissions of Radionuclides Other Than Radon From DOE Facilities 40 CFR 61.90 and 40 CFR 61.96(b) and 40 CFR 61.92 (DOE 5400.5) and 40 CFR 61.93(b)	An application for approval does not have to be filed for radionuclide sources if the effective dose equivalent caused by all emissions from the new construction or modification is less than 0.1 mrem per year. Radiological emissions (except radon-222 and radon-220) to the ambient air from DOE facilities shall not exceed those amounts that would cause any member of the public to receive an effective dose equivalent of 10 mrem in any one year. Continuous emission monitoring is required for stacks and vents that have the potential, under normal operating conditions, but without emission control release radionuclides in sufficient quantities to cause any member of the general public to receive an effective dose equivalent of 0.1 mrem/year or greater.	HEPA filtration is BAT for radionuclide emissions and shall be installed to minimize radiological emissions to the ambient air and the contribution to the effective dose equivalent to any member of the public from the dryer stack. Continuous stack monitoring will be required on the exhaust stack based on modelling of radionuclide emissions to the site boundary. The monitoring system shall be operated continuously when radionuclide emissions are exhausted through the stack. The monitoring system shall have an isokinetic sampler designed and built in accordance with 40 CFR 61.93. The sampler shall include a radiation monitor with a high radiation alarm.	*Process Description for the Remediation System Design Section 4.0 and 5.0*
Radon Emissions 40 CFR 192, Subpart A	Radon emissions from the dryer or other point sources shall meet a stack limit based on a maximum allowable off-site impact of 0.5 pCi/l annual average for each point source. This limit is based on 40 CFR 192, Subpart A. although this limit is not directly applicable to point sources, applying to the impact from restored sites and not sites under remediation, it is being identified as a relevant and appropriate limit. To calculate the stack limit for a point source, US EPA-approved dispersion modeling shall be used.	Based on the current design of the dryer, modeling was completed on radon emissions from the dryer stack. The results indicate that radon emissions from the dryer will be well below the 0.5 pCi/l limit at the site boundary, therefore, no control equipment or administrative controls will be necessary to maintain compliance with environmental regulatory requirements. To verify that the stack limit will not be exceeded during the operation of the dryer, a continuous radon monitor shall be installed in the stack.	*Process Description for the Remediation System Design Section 4.0 and 5.0*
Ohio EPA Air Toxics Policy	The current PTI regulations provide the Director of the Ohio EPA with a mechanism to require the evaluation of toxic air contaminants from new sources. The Ohio EPA Air Toxics Policy provides a mechanism for calculating the Maximum Acceptable Ground-Level Concentration (MAGLC) for a toxic substance. This value at the site boundary will be modeled to the stack to determine a stack limit. All toxic compounds that will exceed the stack limit shall be controlled administratively or by BAT to lower emissions to below the calculated stack limit.	For toxic compound emissions that were calculated to exceed the established stack limit, administrative controls shall be implemented or emissions shall be controlled by implementing BAT for toxic emissions. BAT for toxic emissions shall be throughput/materials restrictions or carbon beds for organic, caustic scrubbers for acidic fumes, or condenser for organic and acidic fumes. Performance of these control measures will be verified through performance testing during initial operation.	*Process Description for the Remediation System Design Section 4.0 and 5.0*

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Table B-1 - Substantive Permitting Requirements for Air Contaminant Sources (Continued)

Citation	Substantive Permitting Requirements	Compliance Plan	Cross Reference Index
Substantive Air Permits - Dryer			
Air Emission Standards for Process Vents 40 CFR 264.1030- 264.1036	Reduced total organic emissions below 1.4 kg/h (3 lbs/hr) and 2.8 Mg/yr (3.1 tons/yr). Control device (condenser or absorber) must recover organic vapors with an efficiency of 95 percent or greater. No regulations have been promulgated for process vents associated with thermal drying, however, 40 CFR 264.1030- 1036 will be relevant and appropriate but not applicable to air emission standards for process vents associated with thermal drying.	To control organic emissions, BAT shall be implemented. BAT for organic emissions shall be either carbon beds or condensers or administrative controls.	*Process Description for the Remediation System Design Section 4.0 and 5.0*
Air Quality Standards 40 CFR 60.670 Subpart OOO	Stack emissions from affected facilities shall not: contain particulate matter in excess of 0.05 g/dscm; or exhibit greater than 7 percent opacity, unless the stack emissions are discharged from an affected facility using a wet scrubbing control device. These standards are relevant and appropriate since shredder and conveyor systems were specified.	Shredder and conveyor systems will be enclosed with dust suppression system to meet this requirement. Also, preliminary design includes a spray tower to remove particulate prior to discharge from the dryer. BAT for particulate radionuclides emissions shall be HEPA Filtration with differential pressure gauge and low differential pressure alarm to be installed on the dryer off-gas system.	*Process Description for the Remediation System Design Section 4.0 and 5.0*
Air Quality Standards OAC 3745-21-07(G)(2)	Emissions of photochemical reactive material from processes, including drying, not to exceed 40 lbs/day, with a peak of 8 lbs/hour.	BAT shall be implemented to control organic emissions. BAT for organic emissions shall be either administrative controls or installing carbon beds or a condenser.	*Process Description for the Remediation System Design Section 4.0 and 5.0*
Air Quality Standards OAC 3745-21-02(C) and OAC 3745-21-03(D)	This requirement covers ambient air quality standards, guidelines, and methods of ambient air quality measurements for non-methane hydrocarbons. Mean ambient concentration of non-methane hydrocarbons not to exceed 160 micrograms/cubic meters (0.24 ppm as carbon) between 6 and 9 a.m.; methods for determining ambient concentration of non-methane hydrocarbons.	During drying, hydrocarbon soil contaminants may be evolved with the steam. An uncontrolled release could lead to a violation of this standard. BAT shall be implemented to control non-methane hydrocarbon emissions. BAT to reduce non-methane hydrocarbon emissions shall be either administrative controls or installing carbon beds or a condenser. Compliance to this standard shall be demonstrated using US EPA-approved air modeling.	*Process Description for the Remediation System Design Section 4.0 and 5.0*
General Provisions on Air Pollution Control OAC 3745-15-07(A)	Emission of any substance into the air in such a manner or in such amounts as to endanger the health, safety or welfare of the public, or cause unreasonable injury or damage to property, is hereby found and declared a public nuisance. It shall be unlawful for any person to cause, permit, or maintain any such public nuisance.	Potential emissions from the dryer shall be evaluated during the design phase. Emissions shall be controlled using BAT either administratively or installing BAT control equipment.	*Process Description for the Remediation System Design Section 4.0 and 5.0*

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Table B-1 - Substantive Permitting Requirements for Air Contaminant Sources (Continued)

Citation	Substantive Permitting Requirements	Compliance Plan	Cross Reference Index
Substantive Air Permits - Dryer			
Nitrogen Oxide Standards OAC 3745-23-06(B)	Except as otherwise provided in these regulations, all stationary nitrogen oxide emission sources shall minimize nitrogen oxide emission by use of the latest available control techniques and operating practices in accordance with best current technology.	To minimize nitrogen oxide emissions, the dryer shall be equipped with low NOx burners which is considered BAT for gas-fired burners.	*Process Description for the Remediation System Design Section 4.0 and 5.0*

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Table B-1 - Substantive Permitting Requirements for Air Contaminant Sources (Continued)

Citation	Substantive Permitting Requirements	Compliance Plan	Cross Reference Index
Excavated Working Materials - Materials Being Excavated, Transported, Stored, or Blended			
Permits to Install New Sources of Emissions OAC 3745-31-05(A)	The director shall issue a permit to install if he determines that the installation or modification and operation of an air contaminant source will: • Not prevent or interfere with the attainment or maintenance of applicable ambient air quality standards; • Not result in a violation of any applicable air pollution control laws; and • Employ best available technology to control emissions.	Permits to Install would be required for the fueling station, rotary dryer, and gas furnace in absence of the CERCLA 121(e) permitting exemption. These sources will be installed such that they do not interfere with the attainment or maintenance of any applicable air quality standards or cause a violation of applicable air control laws. BAT will be employed to control both point source and fugitive emissions associated with the project.	*Process Description for the Remediation System Design Section 4.0 and 5.0*

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Table B-1 - Substantive Permitting Requirements for Air Contaminant Sources (Continued)

Citation	Substantive Permitting Requirements	Compliance Plan	Cross Reference Index
Excavated Working Materials - Materials Being Excavated, Transported, Stored, or Blended			
Particulate Matter Standards OAC 3745-17-07(B) and OAC 3745-17-8 (B)	Visible particulate emissions from any fugitive dust source shall not exceed twenty percent opacity as a three-minute average except: a) There shall be no visible particulate emissions from any paved roadway or parking area except for a period of time not to exceed six minutes during any sixty-minute observation period. b) There shall be no visible particulate emissions from any unpaved roadway or parking area except for a period of time not to exceed thirteen minutes during any sixty-minute observation period. c) There shall be no visible particulate emissions from any material storage piles except for a period of time not to exceed thirteen minutes during any sixty-minute observation period.	No person shall cause or permit any fugitive dust source to be operated; or any materials to be handled, transported, or stored; or a building or its appurtenances or a road to be used, without taking or installing reasonably available control measures to prevent fugitive dust from becoming airborne. Such reasonably available control measures shall include, but not limited to, one or more of the following which are appropriate to minimize or eliminate visible particulate emissions of fugitive dust: 1) The use of water or other suitable dust suppression chemicals for the control of fugitive dust from demolition of existing buildings or structures, constructions operations, the grading of roads or clearing land; 2) The periodic application of asphalt, water, or other suitable dust suppression chemicals on dirt or gravel roads and parking lots, and other surfaces which can cause emissions of fugitive dust; suitable coverings; 3) The periodic application of water or other suitable dust suppression chemicals, the installation of storage silos, bins, or other enclosed structures, or the use of canvas or other suitable coverings, for all materials stockpiles and stockpiling operations; 4) The covering, at all times, of open bodied vehicles when transporting materials likely to become airborne; 5) The paving of roadways and the maintaining of roadways in a clean condition. Fugitive sources can also be controlled through work practices such as minimize handling, disturbances, or time exposed of the residues. For contingency materials that will be stored for an extended period of time, more stringent BAT controls shall be implemented such as applying tarps or building a ventilated temporary structure with BAT controls such as HEPA filtration. For contingency materials that will be stored for an extended period of time, more stringent BAT controls shall be implemented such as applying tarps or building a ventilated temporary structure with BAT controls such as HEPA filtration.	*Process Description for the Remediation System Design Section 4.0 and 5.0 and the Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*

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Table B-1 - Substantive Permitting Requirements for Air Contaminant Sources (Continued)

Citation	Substantive Permitting Requirements	Compliance Plan	Cross Reference Index
Excavated Working Materials - Materials Being Excavated, Transported, Stored, or Blended			
Radon Emissions	Radon emissions from excavated working materials are intermittent fugitive sources and will be controlled by implementing BAT with no numerical emission rate limit. This policy is described in greater detail in Section B.2.3.	BAT control for radon emissions from excavated working materials can be, but not limited to, applying water or a dust suppressant over the residues, or work practices to minimize handling, disturbances or time exposed. For contingency storage piles that will be stored for an extended period of time, more stringent BAT controls shall be implemented such as applying tarps or building a ventilated temporary structure with controls such as carbon beds. For a more detailed description of the BAT measures to be employed to minimize fugitive emissions, see the Compliance Plan for OAC 3745-17-07(B), page B-13.	*Process Description for the Remediation System Design Section 4.0 and 5.0 and the Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*
General Provisions on Air Pollution Control OAC 3745-15-07 (A)	Emission of any substance into the air in such a manner or in such amounts as to endanger the health, safety or welfare of the public, or cause unreasonable injury or damage to property, is hereby found and declared a public nuisance. It shall be unlawful for any person to cause, permit, or maintain any such public nuisance.	Fugitive emissions shall be controlled using BAT. See OAC 3745-17-07(B) and OAC 3745-17-8 (B).	*Process Description for the Remediation System Design Section 4.0 and 5.0*

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Table B-1 - Substantive Permitting Requirements for Air Contaminant Sources (Continued)

Citation	Substantive Permitting Requirements	Compliance Plan	Cross Reference Index
Waste Pits			
National Emission Standards for Air Pollutants (NESHAP) -40 CFR 61, Subpart Q - Emissions of Radon From Department of Energy Facilities	No source at a DOE facility shall emit more than 20 $pCi/m^2/sec$ of radon-222 as an average for the entire source, into the air. Source means any building, structure, pile, impoundment or area used for interim storage or disposal that is or contains waste material containing radium in sufficient concentration to emit radon-222 in excess of this standard prior to remedial action.	See Section B 2.3.	*Process Description for the Remediation System Design Section 4.0 and 5.0*

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Table B-2 - NPDES [redacted]itting Requirements

Citation	Substantive Permitting Requirements	Compliance Plan	Cross Reference Index
Ohio EPA Permit No. 1IO00004*ED			
Ohio EPA NPDES Permit No. 1IO0004*ED	Wastewater discharges associate with the OU1 remedial action must be treated to ensure compliance with the terms and conditions of the FEMP NPDES permit. The DOE is required to notify the Ohio EPA of any activities or changes at the site which have the potential to significantly alter the character of the wastewater streams being discharged under its existing NPDES permit. A NPDES permit modification is required if the discharge is deemed significant enough to cause a change in the character of the wastewater stream. The existing NPDES permit must also be modified to reflect the addition on any new point source discharges of process wastewaters or stormwaters. Construction related stormwater runoff must be managed in accordance with the requirements of the existing FEMP NPDES permit and Stormwater Pollution Prevention Plan.	Wastewater discharges associated with the OU1 remedial action will be treated to ensure compliance with NPDES permit requirements. The existing NPDES permit will be modified and/or renewed to reflect process wastewater discharges and to incorporate the addition of the new industrial stormwater outfall to Paddy's Run Creek. Construction related stormwater runoff will continue to be managed in accordance with the requirements of the existing FEMP NPDES permit and Stormwater Pollution Prevention Plan.	*Process Description for the Remediation System Design Section 7.0* *DCD Section 2.3.5.3 and Waste Excavation Plan For the OU1 Remediation System Design Section 5.0*

Table B-3 - RCRA Substantive Permitting Requirements

Citation	Substantive Permitting Requirements	Compliance Plan	Cross Reference Index
RCRA Substantive Permitting Requirements			
Hazardous Waste Determinations 40 CFR 262.11 (OAC 3745-52-11)	Generators of wastes must determine whether or not these wastes are hazardous in accordance with the requirements of this rule.	Excavation, size reduction, homogenization, blending, and drying of pit wastes will result in the production of a single waste stream that will subsequently be shipped off-site by railcar for disposal at a PCDF. Representative samples from each railcar will be sampled to ensure they meet disposal facility waste acceptance criteria. As documented in the OU1 FS/PP and ROD, this waste stream does not contain RCRA listed wastes and therefore, samples will be analyzed for RCRA characteristics only in accordance with the requirements of 40 CFR 262.11 and OAC 3745-52-11. If analytical results indicate the waste exhibits RCRA hazardous characteristics, the railcar will be shipped to a PCDF for treatment and disposal as hazardous waste.	*Sampling and Analysis Plan to be developed as a part of the Remedial Action Work Plan.*

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Table B-3 - RCRA Substantive [redacted]itting Requirements (Continued)

Citation	Substantive Permitting Requirements	Compliance Plan	Cross Reference Index
RCRA Substantive Permitting Requirements			
Preparing and Transporting Hazardous Waste Off-site. 40 CFR 262.20 through 262.33 and 40 CFR 263.20 (OAC 3745-52-20 through 33 and OAC 3745-52-40 and OAC 3745-52-42)	Any generator who transports hazardous waste for off-site treatment, storage, or disposal must originate and follow-up the manifest for off-site shipments. Pre-transporting requirements include appropriate packaging, labeling, marking, and placarding.	If analytical results indicate the waste exhibits RCRA hazardous characteristics, the railcar will be shipped to a PCDF for treatment and disposal as hazardous waste in accordance with the provisions of these regulations.	*Sampling and Analysis Plan to be developed as a part of the Remedial Action Work Plan.*
Closure 40 CFR 264, Subpart G (OAC 3745-55-11 through 16)	Owner and/or operators must close facilities in a manner that: • Minimizes the need for further maintenance • Minimizes post-closure escape of hazardous constituents • Complies with specific unit type closure requirements	Hazardous waste management units located within the OU1 boundary will be closed in accordance with the substantive provisions of these requirements during the OU1 remedial process. As documented in the Draft Director's Final Findings and Orders between the DOE and the Ohio EPA, demonstration of compliance with substantive closure and post-closure requirements for hazardous waste management units are documented in this DCD.	*Waste Excavation Plan for the OU1 Remediation System Design*

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Table B-3 - RCRA Substantive [redacted]tting Requirements (Continued)

Citation	Substantive Permitting Requirements	Compliance Plan	Cross Reference Index
RCRA Substantive Permitting Requirements			
Post-Closure 40 CFR 264 Subpart G 40 CFR 264.117 and 40 CFR 264.119 (OAC 3745-55-17 and OAC 3745-55-19)	Post-closure care and use of property for a period as necessary to protect human health and the environment including: • Access controls • Monitoring Post-closure notices must include deed notation/use restriction.	Post-closure care will be provided in accordance with the substantive provisions of these requirements during the OU1 remedial process. As documented in the Draft Director's Final Findings and Orders between the DOE and the Ohio EPA, demonstration of compliance with substantive closure and post-closure requirements for hazardous waste management units are documented in this DCD.	*Waste Excavation Plan for the OU1 Remediation System Design*
Waste Piles OAC 3745-56-51, 54, and 58	These requirements specify design and operating requirements, monitoring, and inspection, closure and post-closure care. Specific substantive requirements include: • Run-on/run-off control systems must be designed and installed to prevent flow onto or runoff from the active pile during peak flows from a 25-year, 24-hour storm event. • Collection and hold facilities associated with run-on/run-off control systems must be emptied after storms. • Piles must be covered or otherwise managed to prevent wind dispersion. • Waste piles must be inspected weekly and after storms to ensure the integrity of run-on and run-off controls. • At closure, owners must remove or decontaminate all waste residues, contaminated system components, contaminated subsoils and structures, and equipment contaminated with waste and leachate and manage as hazardous waste.	Waste piles generated during the course of the project will be managed in accordance with the substantive provisions of these requirements. Under the design build and operate concept feedstock piles associated with the process facility would be contained under roof and would be located on a concrete surface with run-on/run-off collection control. Feedstock and contingency piles would be managed to control wind dispersal. Upon completion of remedial activities, the processing facility would be remediated to remove all processing facilities and residual contamination consistent with established remedial levels. The ARASA contractor will be required to meet the substantive provisions of the requirements.	*Waste Excavation Plan for the OU1 Remediation System Design, Process Description Sections 2.0 and 3.0, and General Arrangement Drawings*

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Table B-4 - CWA Section 404 and 401 [redacted]antive Wetland Permitting Requirements

Citation	Substantive Permitting Requirements	Compliance Demonstration	Cross Reference Index
Nationwide Permit 26 - Substantive Permitting Requirements			
Nationwide Permits 33 CFR Part 330, Appendix A	Discharges of dredged and fill material associated with the OU1 remedial action shall not exceed 10 acres or more acres of total disturbance.	Discharges of dredged or fill material associated with the OU1 remedial action total approximately 4.96 acres.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*
	No activity may cause more than a minimal adverse effect on navigation.	Discharges will be conducted within isolated and headwater wetlands and therefore, will have no adverse impacts on navigation.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*
	Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.	Fill material will be maintained and stabilized upon completion of remedial activities. Public access to the OU1 area of the site is restricted to site personnel, via the existing site security system.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*
	Appropriate erosion control and siltation controls must be used and maintained in effective operating condition during construction, and all exposed soil or other fills must be permanently stabilized at the earliest practicable date.	Appropriate erosion control and siltation devices will be installed and maintained to minimize solids loadings to wetlands and Paddys Run. Erosion and siltation control devices will be design in accordance with the applicable requirements of USDA's Water Management and Sedimentation Control Manual for Urbanizing Areas and the provisions of the current FEMP Stormwater Pollution Prevention Plan.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*

Table B-4 - CWA SECTION 404 and 401 Subs[redacted]e Wetland Permitting Requirements (Continued)

Citation	Substantive Permitting Requirements	Compliance Demonstration	Cross Reference Index
Nationwide Permit 26 - Substantive Permitting Requirements			
Nationwide Permits 33 CFR Part 330, Appendix A	No activity may substantially disrupt the movement of those species of aquatic life indigenous to the water body, including those species which normally migrate through the area, unless the activity's primary purpose is to impound water.	Discharges of dredge and fill material will be conducted with headwater and isolated wetland systems and therefore, will not substantially disrupt the movement of any indigenous aquatic species.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*
	Heavy equipment working in wetlands must be placed on mats or other measures must be taken to minimize soil disturbance.	Appropriate measures will be taken to ensure impacts from heavy equipment operating in wetlands will be avoided or minimized to the maximum extent practicable.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*
	No activity is authorized under any Nationwide Permit which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified in the Federal Endangered Species Act, or which is likely to destroy or adversely modify the critical habitat of such species.	No known federally listed or proposed threatened or endangered species will be impacted by dredge and fill activities conducted in support of the OU1 remedial action.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*
	No activity which may adversely affect historic properties listed, or eligible for listing, in the National Register of Historic properties is authorized.	No known listed or potential eligible historic properties will be impacted by the OU1 remedial action.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*

Table B-4 - CWA SECTION 404 and 401 Substantive Wetland Permitting Requirements (Continued)

Citation	Substantive Permitting Requirements	Compliance Demonstration	Cross Reference Index
Nationwide Permit 26 - Substantive Permitting Requirements			
Nationwide Permits 33 CFR Part 330, Appendix A	A wetland delineation is required to define the areal extent of impacts to wetland areas. Wetland delineations must be prepared in accordance with the current method required by the ACOE.	A sitewide jurisdictional wetland delineation was conducted using the ACOE 1987 Wetland Delineation manual and was subsequently approved by the ACOE in 1993. This delineation has served as the basis for defining wetland impacts associated with remedial activities at the FEMP site.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*
	No discharge of dredged or fill material may occur in the proximity of a public water supply intake except where the discharge is for repair of the public water supply intake structures or adjacent bank stabilization.	No known public water supply intake structures existing within a 1000 foot radius of proposed OU1 discharges.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*
	No discharge of dredged or fill material may consist of unsuitable material (e.g., trash, debris, car bodies, etc.) and material discharged must be free from toxic pollutants in toxic amount (see section 307 of the CWA).	Fill material associated with OU1 fill activities will consist of suitable material. Clean backfill will be used during stabilization of the OU1 area upon completion of remedial activities.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*

Table B-4 - CWA SECTION 404 and 401 Subs[redacted]e Wetland Permitting Requirements (Continued)

Citation	Substantive Permitting Requirements	Compliance Demonstration	Cross Reference Index
Nationwide Permit 26 - Substantive Permitting Requirements			
Nationwide Permits 33 CFR Part 330, Appendix A	Discharges of dredged or fill material into waters of the United States must be minimized or avoided to the maximum extent practicable at the project site. A compensatory mitigation plan defining the manner in which adverse impacts will be compensated for may be required.	Although the DOE has avoided and minimized impacts to wetlands and waters of the United State through the remedial design process, approximately 4.96 acres of unavoidable adverse wetland impacts will be associated with the Operable Unit remedial action. Impacts to these areas will be mitigated at a 1 to 1.5 acre ratio in accordance with the Sitewide Wetland Mitigation Plan currently being prepared under the Operable Unit 5 Remedial Design process. In addition, the DOE has evaluated the proposed excavation of fill material from the area directly north of Waste Pit 5 and has determined that limiting the maximum depth of the proposed excavation to an elevation of 575 feet (MSL) should preclude direct contact with the water table in the immediate vicinity of the proposed borrow pit, thereby effectively minimizing potential adverse hydrologic impacts to the 26-acre wetland.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*
	To the maximum extent practicable, discharges must not permanently restrict or impede the passage of normal or expected high flows or cause the relocation of waters unless the primary purpose of the fill is to impound waters.	Discharges associated with the OU1 remedial action will not adversely affect normal or anticipated high flows within those drainage basins which are contained within the OU1 boundary.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*
	If the discharge creates an impoundment of water, adverse impact on the aquatic system caused by the accelerated passage of water and/or the restriction of its flow shall be minimized to the maximum extent practicable.	Discharges of dredged or fill material associated with the OU1 remedial action will not result in the impoundment of water within wetland areas located within the OU1 boundary.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*

Table B-4 - CWA SECTION 404 and 401 Substantive Wetland Permitting Requirements (Continued)

Citation	Substantive Permitting Requirements	Compliance Demonstration	Cross Reference Index
Nationwide Permit 26 - Substantive Permitting Requirements			
Nationwide Permits 33 CFR Part 330, Appendix A	Discharges into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.	Proposed discharges of dredge and fill material will not occur with migratory waterfowl breeding areas.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*
	Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.	Temporary fills will be removed upon completion of remedial activities and the OU1 will be stabilized in accordance with the requirements of the grading plan prepared as part of this design package.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*
Section 401 State Water Quality Certification - Substantive Permitting Requirements			
Section 401 Water Quality Certifications OAC 3745-32	Discharges of dredged or fill material are limited to a total disturbance of 5 acres or less.	While Nationwide Permit 26 allows for a maximum disturbance of 10 acres, the Ohio EPA has restricted the total allowable acreage authorized under the Nationwide Permit to 5 acres under its corresponding Section 401 State Water Quality Certification. The OU1 remedial action will result in a total impact of 4.67 acres and therefore, this impact is in compliance with this substantive requirement.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*
	Discharges of dredged or fill material are precluded from occurring in special aquatic sites such as bogs and fens.	The wetland systems located within the OU1 boundary do not meet the technical definition of bogs or fens as established in the 401 State Water Quality Certification.	*DCD Section 2.3.5.3 and Waste Excavation Plan for the OU1 Remediation System Design Section 5.0*

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REVISED SECTION 3.0 OF DESIGN CRITERIA DOCUMENT

SECTION 3

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REVISED APPENDIX A OF DESIGN CRITERIA DOCUMENT

TABLE A-1
LOCATION-SPECIFIC ARARS
(APPLICABLE REQUIREMENTS; RELEVANT AND APPROPRIATE REQUIREMENTS)

Category	Applicable Requirements	Compliance Strategy	Addressed In
Wildlife Protection	16 USC 1531 et. seq., and 50 CFR 17.21, 17.31, 17.61, 17.71, 17.94, 50 CFR 402, and Endangered Species Act All federal agencies must insure that any action authorized, funded or carried out by them is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of the constituent elements essential to the conservation of a listed species within a defined critical habitat. Additional requirements apply if it is determined that a proposed activity could adversely affect these species or their habitat.	In 1994, updated surveys at the FEMP determined the presence of summer habitat for the federally-listed endangered Indiana bat along Paddys Run including areas adjacent to OU1. This area is not critical habitat. Consultation with U.S. Fish and Wildlife Service will determine restorative measures that may need to be taken during and after remedial actions. If any endangered or threatened species are encountered, the additional requirements of the referenced regulation would be applicable. Efforts will be made during remediation to preserve riparian vegetation, habitat for the Indiana bat, to the maximum practicable extent. Mitigatory requirements will be determined on a site-wide basis and presented as an outcome of the OU5 design process, for appropriate implementation.	DCD Section 2.3.5.3
Wildlife Protection	ORC 1531.25, 1518.02, and 1501: 18-1, Ohio Endangered Species Regulations No person shall take or possess any native species of wild animal, or any eggs, or offspring thereof, that is endangered with state-wide extinction.	Updated surveys in 1993 and 1994 found state-listed threatened Sloan's crayfish populations in sections of Paddys Run, including sections directly adjacent to OU1 area. Wastewater controls will be designed to minimize negative impacts on Paddys Run, to the maximum practicable extent during and after remedial activities. Process wastewater will not be discharged to Paddys Run from any OU1 operation. Stormwater flows from the new facilities area, for storms greater than the 25 year, 24 hour will discharge to Paddys Run. Mitigatory requirements will be determined on a site-wide basis and presented as an outcome of the Soil Remediation Project design process, for appropriate implementation. The *Waste Excavation Plan for the Operable Unit 1 Remediation System Design* provides detail on the design of stormwater controls.	DCD Section 2.3.5.3 and *Waste Excavation Plan for the Operable Unit 1 Remediation System Design* Section 5
Wildlife Protection	16 USC 66 *et seq.*, Fish and Wildlife Coordination Act Requires consultation with other state agencies for any activities which might affect any body of water for the purpose of conserving fish and wildlife resources.	Remedial activities at OU1 may have the potential to affect wildlife and fish in Paddys Run. Wastewater controls will be designed to minimize negative impacts on Paddys Run, to the maximum practicable extent during and after remedial activities. Process wastewater will not be discharged to Paddys Run from any OU1 operation. Stormwater flows from the new facilities area, for storms greater than the 25 year, 24 hour will discharge to Paddys Run. The *Waste Excavation Plan for the Operable Unit 1 Remediation System Design* provides detail on the design of stormwater controls.	DCD Section 2.3.5.3 and *Waste Excavation Plan for the Operable Unit 1 Remediation System Design* Section 5

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TABLE A-1
(Continued)

Category	Applicable Requirements	Compliance Strategy	Addressed In
Historic Preservation	16 USC 469, Archaeological and Historic Preservation Act Implemented through 36 CFR 800 Requires preservation of artifacts and data associated with archaeological finds.	Historical data and artifacts are not expected to be discovered or destroyed during remedial activities at OU1. Nevertheless, the requirements of the law are applicable.	n/a
Historic Preservation	16 USC 470 *et seq.*, National Historic Preservation Act Implemented through 36 CFR 800 DOE must take into account the effect of an undertaking on historic properties and accord the Advisory Council on Historic Preservation a reasonable opportunity to comment. Historic properties are described as any prehistoric or historic district, building, site, structure, or object included in, or eligible for inclusion in the National Register of Historic Places. This term includes artifacts, records, and remains that are related to and located within such properties. Historic properties that are substantially altered or demolished must be recorded for future use and reference.	Areas adjacent to OU1 boundaries will be surveyed pursuant to the programmatic agreement by the DOE, the Advisory Council on Historic Preservation, and the Ohio Historic Preservation Office. The programmatic agreement stipulates what actions are required for compliance with the National Historic Preservation Act. Historic sites listed or eligible for listing in the *National Register of Historic Places* are not present within OU1 nor is it expected that any will be. Nevertheless, the requirements of the law are applicable.	n/a
Historic Preservation	16 USC 470 (aa) - 470 (11), Archaeological Resources Protection Act Requires permit for removal of any archaeological resources from federal lands.	OU1 is located on federal land. Although archeological resources are not expected to be encountered on the site, the requirements of the law remain applicable to OU1 remedial activities.	n/a
Historic Preservation	16 USC 431-433 and USC 461-467, Antiquities Act and Historic Sites Act. Requires that no person may appropriate, excavate, injure or destroy any historical or prehistoric ruin or monument or any object or antiquity situated or controlled by the U.S. Government without an applicable permit. Also requires the identification and preservation of cultural resources on federal lands.	Although OU1 is not expected to contain cultural resources or natural landmarks of significance, it is located on federal land and the law is applicable should any cultural resources be discovered during remedial actions on site.	n/a
Historic Preservation	25 USC 3001, Native American Graves Protection and Repatriation Act Provides for return of human remains and cultural objects from Native American graves to affiliated tribes.	Although OU1 does not contain known American Indian burial grounds, this law would apply should graves and human remains be discovered during excavation of the waste pits.	n/a

TABLE A-1
(Continued)

Category	Applicable Requirements	Compliance Strategy	Addressed In
Historic Preservation	42 USC 1996, American Indian Religious Freedom Act Provides for tribal access by native peoples to grave sites and sites of cultural, symbolic, or religious significance.	Although no sites of this nature have been identified at OU1, the law is applicable to federal lands and activities.	n/a
Historic Preservation	Executive Order 11593, Protection and Enhancement of Cultural Environment. Requires an inventory of site for potential historic places for eligibility in the *National Register of Historic Places*.	The requirement is applicable to activities at OU1. An updated inventory will be completed prior to remedial action. It is not expected that any sites of this nature will be identified at OU1.	n/a
Siting	10 CFR 1022, Protection of Wetlands and Floodplain Management 10 CFR 1022 contains the DOE regulation implementing Executive Order 11990 and 11988. Executive Order 11990 requires that Federal agencies take action to avoid adversely impacting wetlands wherever possible, to minimize wetlands destruction, to preserve the values of wetlands, and to prescribe procedures to implement the policies and procedures of the Executive Order. Executive Order 11988 requires Federal agencies undertaking actions within a floodplain to evaluate the potential the action has for adverse impact on the floodplain. If it is determined that adverse impacts could occur, the effects of the action must be minimized to the extent practical.	Approximately 36 acres of jurisdictional wetlands were identified on the site as the result of the 1993 wetland delineation. Wetland impacts will be minimized during remedial activities by avoiding these areas to the maximum extent possible. Mitigatory requirements will be determined on a site-wide basis and presented as an outcome of the Soil Remediation Project design process, for appropriate implementation. OU1 is in the immediate vicinity of the Paddys Run Floodplain. Remediation activities will be undertaken while minimizing impacts to the floodplain primarily through minimizing activities within the floodplain which could cause substantial adverse changes to the floodplain. The final topography of the site and its impact on the floodplain will be addressed on a site-wide basis and presented as an outcome of the Soil Remediation Project design process, for appropriate implementation.	DCD Section 2.3.5.3 and Soil Remediation Project Remedial Design Package
Construction	33 CFR 330, Nationwide Permit Program (33 CFR 323 and OAC 3745-32) The Army Corps of Engineers authorizes discharges of dredge or fill material into wetlands and waters of the United States under its Nationwide Permit (33 CFR 330) or Individual Permit Programs (33 CFR 323). Section 401 State Water Quality Certification (OAC 3745-32) is also required for these types of discharges. Approximately 4.9 acres of jurisdictional wetlands will be impacted as a result of the Operable Unit One Remedial Action and will be subjected to the substantive requirements of these regulations.	Discharges of dredged and fill material associated with the OU1 remedial action will be conducted in accordance with the substantive requirements of Nationwide Permit 26 - Headwaters and Isolated Waters Discharges and its corresponding Section 401 State Water Quality Certification. Wetland mitigatory requirements for OU1 impacts will be addressed under the site-wide wetland mitigation plan currently being developed by DOE as part of the Soil Remediation Project Remedial Design Package.	Soil Remediation Project Remedial Design Package

TABLE A-2
CHEMICAL-SPECIFIC ARARS
(APPLICABLE REQUIREMENTS; RELEVANT AND APPROPRIATE REQUIREMENTS; TBCs)

Category	Applicable Requirements	Compliance Strategy	Addressed In
Surface Water Discharges	OAC 3745-1 Ohio Water Quality Standards It is the purpose of these Water Quality Standards to establish minimum water quality requirements for all surface waters of the State, thereby protecting public health and welfare; and to enhance, improve, and maintain water quality as provided under the laws of the State of Ohio, and ORC 6111.041, the Federal Clean Water Act, 33 U.S.C. Section 1251 *et seq.* Whenever two or more use designations apply to the same surface water, the more stringent criteria of each use designation will apply.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP Wastewater Treatment System where it will be combined with other site wastewaters for treatment. Pretreatment of OU1 wastewater will consist of solids removal. The method of pretreatment is discussed in detail in the *Process Description for the Remediation System Design*. Treated wastewaters will be discharged in accordance with the requirements of the FEMP NPDES permit and applicable numeric and narrative water quality standards promulgated in OAC 3745-1. The FEMP NPDES permit will be modified to incorporate OU1 discharges in the event such a change is warranted.	*Process Description for the Remediation System Design* Section 7
Surface Water Discharges	OAC 3745-01-04 Criteria Applicable to All Waters The following general water quality criteria shall apply to all surface waters of the State including mixing zones. To every extent practical and possible as determined by the director, these waters shall be: (A) Free from suspended solids or other substances that enter the waters as a result of human activity and that will settle to form putrescent or otherwise objectionable sludge deposits, or that will adversely affect aquatic life; (B) Free from floating debris, oil, scum and other floating materials entering the waters as a result of human activity in amounts sufficient to be unsightly or cause degradation; (C) Free from materials entering the waters as a result of human activity producing color, odor or other conditions in such a degree as to create a nuisance; (D) Free from substances entering the waters as a result of human activity in concentrations that are toxic or harmful to human, animal or aquatic life and/or are rapidly lethal in the mixing zone; (E) Free from nutrients entering the waters as a result of human activity in concentrations that create nuisance growths of aquatic weeds and algae.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP Wastewater Treatment System where it will be combined with other site wastewaters for treatment. Pretreatment of OU1 wastewater will consist of solids removal. The method of pretreatment is discussed in detail in the *Process Description for the Remediation System Design*. Treated wastewaters will be discharged in accordance with the requirements of the FEMP NPDES permit and applicable numeric and narrative water quality standards promulgated in OAC 3745-1. The FEMP NPDES permit will be modified to incorporate OU1 discharges in the event such a change is warranted.	*Process Description for the Remediation System Design* Section 7

TABLE A-2
(Continued)

Category	Applicable Requirements	Compliance Strategy	Addressed In
Surface Water Discharges	OAC 3745-1-07, Table 7-1 Numerical and Narrative Criteria for Aquatic Life Habitat and Water Supply Use Designation Surface Waters in the State of Ohio must comply with the maximum concentrations of each contaminant of concern listed in Table I-5 and I-6 in Attachment I for inside and outside the mixing zones of the receiving water to protect warm water aquatic habitats.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP Wastewater Treatment System where it will be combined with other site wastewaters for treatment. Pretreatment of OU1 wastewater will consist of solids removal. The method of pretreatment is discussed in detail in the *Process Description for the Remediation System Design*. Treated wastewaters will be discharged in accordance with the requirements of the FEMP NPDES permit and applicable numeric and narrative water quality standards promulgated in OAC 3745-1. The FEMP NPDES permit will be modified to incorporate OU1 discharges in the event such a change is warranted.	*Process Description for the Remediation System Design* Section 7
Surface Water Discharges	OAC 3745-1-07, Table 7-10, Outside Mixing Zone Maximum Criteria for Water Hardness Dependent Parameters in Warm Water Habitats Table I-7 in Attachment I contains the numerical limits on cadmium, copper, chromium, lead, and silver.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP Wastewater Treatment System where it will be combined with other site wastewaters for treatment. Pretreatment of OU1 wastewater will consist of solids removal. The method of pretreatment is discussed in detail in the *Process Description for the Remediation System Design*. Treated wastewaters will be discharged in accordance with the requirements of the FEMP NPDES permit and applicable numeric and narrative water quality standards promulgated in OAC 3745-1. The FEMP NPDES permit will be modified to incorporate OU1 discharges in the event such a change is warranted.	*Process Description for the Remediation System Design* Section 7
Surface Water Discharges	OAC 3745-1-07, Table 7-11 Outside Mixing Zone 30-Day Average Criteria for Water Hardness Dependent Parameters in Warm Water Habitats Table I-8 in Attachment I contains the average numerical limits for cadmium, copper, chromium, lead, and silver.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP Wastewater Treatment System where it will be combined with other site wastewaters for treatment. Pretreatment of OU1 wastewater will consist of solids removal. The method of pretreatment is discussed in detail in the *Process Description for the Remediation System Design*. Treated wastewaters will be discharged in accordance with the requirements of the FEMP NPDES permit and applicable numeric and narrative water quality standards promulgated in OAC 3745-1. The FEMP NPDES permit will be modified to incorporate OU1 discharges in the event such a change is warranted.	*Process Description for the Remediation System Design* Section 7

TABLE A-2
(Continued)

Category	Applicable Requirements	Compliance Strategy	Addressed In
Surface Water Discharges	OAC Table 7-12 Inside Mixing Zone Maximum Criteria for Water Hardness Dependent Criteria in Warm Water Habitats Table I-8 in Attachment I contains numerical limits for cadmium, copper, chromium, lead, and silver.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP Wastewater Treatment System where it will be combined with other site wastewaters for treatment. Pretreatment of OU1 wastewater will consist of solids removal. The method of pretreatment is discussed in detail in the *Process Description for the Remediation System Design*. Treated wastewaters will be discharged in accordance with the requirements of the FEMP NPDES permit and applicable numeric and narrative water quality standards promulgated in OAC 3745-1. The FEMP NPDES permit will be modified to incorporate OU1 discharges in the event such a change is warranted.	*Process Description for the Remediation System Design* Section 7
Surface Water Discharges	OAC 3745-1-07 Outside Mixing Zone Maximum Criteria for pH dependent Parameters in warm water Aquatic Habitats Table I-10 in Attachment I contains the numerical limits for pentachlorophenol. OAC 3745-1-07 Inside the Mixing Zone Maximum Criteria for pH dependent Parameters in warm water Aquatic Habitats Table I-11 in Attachment I contains the numerical limits for pentachlorophenol.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP Wastewater Treatment System where it will be combined with other site wastewaters for treatment. Pretreatment of OU1 wastewater will consist of solids removal. The method of pretreatment is discussed in detail in the *Process Description for the Remediation System Design*. Treated wastewaters will be discharged in accordance with the requirements of the FEMP NPDES permit and applicable numeric and narrative water quality standards promulgated in OAC 3745-1. The FEMP NPDES permit will be modified to incorporate OU1 discharges in the event such a change is warranted.	*Process Description for the Remediation System Design* Section 7
Surface Water Discharges	OAC 3745-1-07 Lower Miami River Temperature Criteria in Fahrenheit and degrees (Celsius) Table I-12 in Attachment I contains the acceptable monthly temperatures for water discharged to the Lower Great Miami River.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP Wastewater Treatment System where it will be combined with other site wastewaters for treatment. Pretreatment of OU1 wastewater will consist of solids removal. The method of pretreatment is discussed in detail in the *Process Description for the Remediation System Design*. Treated wastewaters will be discharged in accordance with the requirements of the FEMP NPDES permit and applicable numeric and narrative water quality standards promulgated in OAC 3745-1. The FEMP NPDES permit will be modified to incorporate OU1 discharges in the event such a change is warranted.	*Process Description for the Remediation System Design* Section 7

TABLE A-2
(Continued)

Category	Applicable Requirements	Compliance Strategy	Addressed In
Air Discharges	OAC 3745-17-07 Particulate Matter Standards See Table B-1, pages B-9 and B-13 Visible particulate emissions from any stack may exceed twenty percent opacity, as a six minute average, for not more than six consecutive minutes in any sixty minutes, but shall not exceed sixty percent opacity, as a six-minute average, at any time.	See Table B-1, pages B-9 and B-13	*Process Description for the Remediation System Design* Sections 4,5 and Waste Excavation Plan, Section 6.0

TABLE A-2
(Continued)

Category	To-Be-Considered Requirements	Compliance Strategy	Addressed In
Soil Remediation	40 CFR 761.125 Requirements for PCB Spill Cleanup PCBs at concentrations greater than 50 ppm are subject to decontamination TSCA requirements in 40 CFR 761.120(b). PCB containers containing non-liquid PCBs, such as contaminated soil, rags, and debris designated for disposal may be stored temporarily (up to 30 days from the date of removal) in an area that does not comply with the storage building requirements at 40 CFR 761.65 (b). 40 CFR 761.125(c) Soils in non-restricted access areas contaminated by a PCB spill will be decontaminated to 10 ppm PCB by weight, provided that the soil is excavated to a minimum depth of 10 inches. The excavated soils will be replaced with clean soils, i.e., containing <1 ppm PCB, and the spill site will be restored (e.g., replacement of turf) [40 CFR 761.125(c)(4)(v)]. For soils in restricted access areas, decontaminate to 25 ppm PCB by weight [40 CFR 761.125(c)(3)(v)].	Concentrations of PCBs at OU1 are expected to be less than 50 ppm. This regulation would then be considered guidance to be considered. PCB containing/contaminated materials are addressed in various ways within the OU1 remediation activities, and subsequently within the design. The *Waste Excavation Plan for the Operable Unit 1 Remediation System Design* (specifically Appendix A) is the primary design document in which this is discussed, both in terms of debris type materials and soils. Relative to contaminated soils, Section A.4 of the *Waste Excavation Plan for the Operable Unit 1 Remediation System Design* presents the OU1 soils management strategy, including soil remediation levels, and soils disposition. The amount of contaminated soil excavated during the remedial action will be based upon the final remediation levels presented therein. The management of other OU1 materials is discussed in Sections A.3 and A.4 of Appendix A of the *Waste Excavation Plan for the Operable Unit 1 Remediation System Design*. Section A.3 addresses the handling of transformers and intact drums. Section A.4 addresses the handling of oversized materials, including potential placement of such materials in the off-site disposal facility, assuming that waste acceptance criteria are met.	*Waste Excavation Plan for the Operable Unit 1 Remediation System Design* Appendix A and Record of Decision for OU5
Radiation	DOE Order 5400.5 Radiation Protection of the Public and Environment DOE Order 5400.5 requires compliance with 40 CFR Part 61, Subpart H criterion of 10 mrem/year effective dose equivalent and monitoring of point source emissions. The DCGs are not release limits. They are one step in the process of controlling releases. DOE uses the guides to screen waste streams for application of best available technologies. If the concentration of a contaminant is above the DCG, the best available technology is applied to bring the annual averages of the contaminant below the DCG at the point of discharge. See Attachment I, Table I-21.	See Table B-1, page B-9	DCD Section 2.2.1.3

TABLE A-2
(Continued)

Category	To-Be-Considered Requirements	Compliance Strategy	Addressed In
Radiation	DOE Order 5400.5 Radiation Protection of the Public and Environment To prevent buildup of radionuclide concentrations in sediment, liquid process waste streams containing radioactive material in settle-able solids may be released to natural waterways if the concentration of radioactive material in the solids present in the waste stream do not exceed 5 pCi/g above background levels of settle-able solids of alpha-emitting radionuclides or 50 pCi/g above background level of settle-able solids for beta-gamma-emitting radionuclides. To protect native animal aquatic organisms, the absorbed dose to these organisms shall not exceed 1 rad per day from exposure to the radioactive material in liquid wastes discharged to material waterways.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP Wastewater Treatment System where it will be combined with other site wastewaters for treatment. Pretreatment of OU1 wastewater will consist of solids removal. The method of pretreatment is discussed in detail in the *Process Description for the Remediation System Design*. Treatment of the combined wastewaters will be undertaken so as to meet the FEMP NPDES permit limits and conditions.	*Process Description for the Remediation System Design* Section 7
Radiation	DOE Order 5400.5 Residual plus natural dose limit for public exposure to residual radioactive material are 100 mrem effective dose equivalent per year. Guidelines for residual concentrations of radionuclides in soil shall be derived from the basic dose limits by means of an environment pathway analysis using specific property data where available. Procedures for these derivations are given in DOE/CH-8901. Residual concentrations of radioactive material in soil are defined as those in excess of background concentrations averaged over an area of 100 square meters. Control and Stabilization and Administrative Control features shall be designed to provide to the extent reasonably achievable, an effective life of 50 years with a minimum life of at least 25 years. Groundwater shall be protected in accordance with legally applicable Federal and State standards.	All waste pit material will be removed from OU1. The only residual material will be soil that meets the Final Remediation Levels established by the OU5 remedial action. The Final Remediation Levels have been developed in accordance with this requirement. Compliance will be demonstrated on a sitewide basis following remediation of the entire site by the Soil Remediation Project. Some material from OU1 will be placed into the On-Site Disposal Facility. The disposal facility will be designed to meet this requirement and demonstration of compliance will be performed by the Soil Remediation Project.	Soil Remediation Project Remedial Design Package

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TABLE A-3
ACTION-SPECIFIC ARARS
(APPLICABLE REQUIREMENTS; RELEVANT AND APPROPRIATE REQUIREMENTS; TBCs)

Category	Applicable Requirements	Compliance Strategy	Addressed In
Radon	40 CFR Part 61, Subpart Q Emission of radon-222 from DOE interim storage and disposal at facilities is limited to 20 pCi/m^2s on an average over the entire source.	See Table B-1 and Section B 2.3.	Substantive Permit Crosswalk, Section B 2.3
Stormwater Control	40 CFR 122.26 (OAC 3745-38) Discharge of Storm Water Runoff Storm water runoff from landfills, construction sites, and industrial activities must be monitored and controlled. A Storm Water Pollution Prevention Plan (SWPPP) is required for construction activities which result in a total land disturbance of 5 or more acres.	Remedial activities will comply with an approved FEMP SWPPP which will include specific inspection and monitoring criteria applicable to all site projects. Additional stormwater measures are discussed in Subsection 2.3.5.3 of the DCD and Section 5 of the *Waste Excavation Plan for the Operable Unit 1 Remediation System Design*. Guidelines set forth in rainwater and land development, Ohio's standard for stormwater management stream protection, 1996, will be followed.	DCD Section 2.3.5.3 and *Waste Excavation Plan for the Operable Unit 1 Remediation System Design* Section 5
Hazardous Waste	ORC 3734.02(H) Digging Where Hazardous or Solid Waste was Located Filling, grading, excavating, building, drilling, or mining on land where hazardous waste or solid waste facility was operated is prohibited without prior approval from the Director of the Ohio EPA.	This requirement needs no further discussion relative to attainment, since Ohio EPA concurrence on the ROD has met the intent of this requirement.	Record of Decision for OU1

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TABLE A-3
(Continued)

Category	Applicable Requirements	Compliance Strategy	Addressed In
Hazardous Waste	OAC 3745-56-51, 54 and 58; Waste Piles These requirements specify design and operating requirements, monitoring and inspection, closure and post-closure care. Specific substantive requirements include: (A) Run-on/run-off control systems must be designed and installed to prevent flow onto or runoff from the active pile during peak flows from a 25-year, 24-hour storm event. (B) Collection and hold facilities associated with run-on/run-off control systems must be emptied after storms. (C) Piles must be covered or otherwise managed to prevent wind dispersal. (D) Waste piles must be inspected weekly and after storms to ensure the integrity of run-on and run-off controls. (E) At closure, owners must remove or decontaminate all waste residues, contaminated system components, contaminated subsoils and structures, and equipment contaminated with waste and leachate and manage as hazardous waste.	The requirements for hazardous waste piles are potentially applicable only to waste excavated from Pits 4 and 5. Based on the design described in the *Process Description for the Remediation System Design*, however, this requirement does not apply to the processing of any OU1 wastes. Specifically, these requirements do not apply to the feed piles that are within the OU1 waste processing facility as these piles are neither for long-term storage nor treatment. In addition, although the contingency stockpile could, at some point, be considered long-term storage, no Pit 4 or Pit 5 wastes will be stored therein. Waste piles will be inspected on a weekly basis after storm events. Waste piles generated during the course of the project will be managed in accordance with the substantive provisions of these requirements. Under the design build and operate concept feedstock piles associated with the process facility would be contained under roof and would be located on a concrete surface with run-on/run-off collection control. Feedstock and contingency piles would be managed to control wind dispersal. Upon completion of remedial activities, the processing facility would be remediated to remove all processing facilities and residual contamination consistent with established remedial levels. The ARASA contractor will be required to meet the substantive provisions of the requirements.	Record of Decision for OU1, Waste Excavation Plan for the OU1 Remediation System Design, Process Description, Sections 2.0 and 3.0, General Arrangement Drawings
Well Abandonment	OAC 3745-9-10 Ohio Water Well Standards Abandonment of Test Holes and Wells.	These requirements for closure of test holes and wells at the FEMP are implemented through the *Sitewide CERCLA Quality Assurance Program Plan*.	*Sitewide CERCLA Quality Assurance Program Plan* Section 5.2 and Appendix J
Air Discharges	OAC 3745-15-07(A) Ohio Air Pollution Control Regulations Describes forms of air pollution nuisances and prohibits their emission or escape.	Both excavation and waste treatment processes have the potential to generate prohibited fugitive emissions. Fugitive and blowing dust carrying contamination will be controlled on excavation faces and spoil piles by standard practices described in the *Waste Excavation Plan for the Operable Unit 1 Remediation System Design*. Shredding and drying activities will take place in enclosures. Design includes a scrubber and HEPA filter in the dryer off-gas system to remove particulates. This process is described in more detail in the *Process Description for the Remediation System Design.*	*Waste Excavation Plan for the Operable Unit 1 Remediation System Design* Sections 4 and 5

TABLE A-3
(Continued)

Category	Applicable Requirements	Compliance Strategy	Addressed In
Fugitive Dust	OAC 3745-17-08 Control of Fugitive Dust Requires the minimization or elimination of visible emissions of fugitive dust generated during grading, loading, or construction operations and other practices which emit fugitive dust.	See Table B-2, page B-13.	*Waste Excavation Plan for the Operable Unit 1 Remediation System Design* Section 5
Air Discharges	OAC 3745-21-02(C) and OAC 3745-21-03(D) Ambient air quality standards and guidelines and methods of ambient air quality measurements (for non-methane hydrocarbons). Mean ambient concentration of non-methane hydrocarbons not to exceed 160 µg/cubic meter (0.24 ppm as carbon) between 6 and 9 a.m.; methods for determining ambient concentration of non-methane hydrocarbons.	METSIM calculations indicate that non-methane hydrocarbons will not be present in the dryer off-gas.	*Process Description for the Remediation System Design* Section 5 and the *METSIM Process Simulation Model, Pit Waste Indirect Thermal Drying*
Air Discharges	OAC 3745-21-07 (G)(2) Control of emissions of organic material from stationary sources. Emissions of photochemical reactive material from processes, including drying, not to exceed 40 lbs/day, with a peak of 8 lbs/hour.	An off-gas composition determination was performed and it was determined that organics would be present in the off-gas. Therefore, a scrubber will be provided to treat the off-gas prior to discharge. The off-gas composition and scrubber are discussed in the *Process Description of the Remediation System Design.*	*Process Description for the Remediation System Design* Sections 4,5
Air Discharges	OAC 3745-31-05(A)(3) Permit to Install The director shall issue a permit to install if he determines that the installation or modification and operation of the air contaminant source will employ the best available technology.	See Table B-1.	DCD Section 2.1.4
NEPA	10 CFR 1021.2 DOE actions must be subjected to NEPA evaluation as outlined by CEQ regulations in 40 CFR 1500-1508.	On June 13, 1994, the DOE issued a revised policy statement on NEPA. The new policy allows DOE, at CERCLA sites, to rely on the CERCLA process to satisfy the procedural aspects of NEPA. NEPA values have been incorporated into the Final Operable Unit 1 Feasibility Study Report. Any further NEPA documentation will be prepared for this project in accordance with established site procedures.	Final Operable Unit 1 Feasibility Study Report

TABLE A-3
(Continued)

Category	Relevant and Appropriate Requirements	Compliance Strategy	Addressed In
Air Discharges	40 CFR 60.670 Subpart OOO Stack emissions from affected facilities shall not: • Contain particulate matter in excess of 0.05 g/dscm; or • Exhibit greater than 7 percent opacity, unless the stack emissions are discharged from an affected facility using a wet scrubbing control device.	These standards are relevant and appropriate to OU1 remedial activities since they specify requirements for shredder and conveyor systems. The standards will be considered when determining BAT requirements for these systems in accordance with OAC 3745-31-05(A)(3). Shredder and conveyor systems will be enclosed with dust suppression system to meet this requirement. Also, design includes a scrubber and HEPA filter to remove particulates prior to discharge from the dryer.	*Process Description for the Remediation System Design* Sections 4,5
BMP Program	40 CFR 125.100 and 125.104 Discharge of Treatment System Effluent Best Management Practices Develop and implement a BMP program to prevent the release of toxic or hazardous pollutants to waters of the U.S. Development and implementation of a sitewide BMP Program is also required as a condition of the FEMP NPDES Permit.	This requirement is programmatic and is met by the approved Best Management Practices Plan currently in place at the FEMP. The FEMP BMP Plan may require revision to include any special circumstances involving this remedial action.	BMP Plan
Solid Waste	40 CFR 241 Subpart B (OAC 3745-27), RCRA Subtitle D On-Site Solid Nonhazardous Waste Management Facilities Design standards are presented in the following citations: 241.200-2, 241.201-2, 241.202-2, 241.203-2, 241.204-2, 241.205-2, 241.206-2, 241.207-2, 241.208-2, 241.209-2, and 241.210-2.	Land disposal of solid waste will not occur in OU1. Solid waste from OU1 destined for on-site disposal will be sent to the On-Site Disposal Facility. The OU1 selected remedy involves handling residual contaminated soils and oversized materials in accordance with the OU5 and OU3 RODs. Appendix A of the *Waste Excavation Plan for the Operable Unit 1 Remediation System Design*, which discusses disposal of these materials on-site, requires that OU1 generated waste meet the waste acceptance criteria of the On-Site Disposal Facility. The design of the On-Site Disposal Facility, including the establishment of final design criteria, will be handled through the Soil Remediation Project remedial design efforts, with the impact of any changes to the OU1 design reflected in future OU1 design efforts.	*Waste Excavation Plan for the Operable Unit 1 Remediation System Design* Appendix A

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TABLE A-3
(Continued)

Category	Relevant and Appropriate Requirements	Compliance Strategy	Addressed In
Hazardous Waste	40 CFR 262.11 (OAC 3745-52-11) Hazardous Waste Determinations Any generator of waste must determine whether or not the waste is hazardous.	Excavation, size reduction, homogenization, blending, and drying of pit wastes are process activities which result in generation of a single waste stream. The newly generated waste is the waste stream that will be shipped off-site for disposal and represents the waste that must comply with regulatory requirements and disposal facility waste acceptance criteria. As documented in the OU1 FS/PP and ROD, this waste stream does not contain RCRA listed wastes; and in accordance with US EPA guidance for Superfund sites and 40 CFR 262.11(c), the waste will be sampled for RCRA characteristics only. The statistical methods that will be used to demonstrate compliance with regulatory criteria and WAC will be included in the RA Sampling and Analysis Plan.	Remedial Action Work Plan Sampling and Analysis Plan
Hazardous Waste	Closure 40 CFR 264, Subpart G (OAC 3745-55-(11-16)) Operator must close facility in a manner that: • Minimizes the need for further maintenance • Minimizes post-closure escape of hazardous constituents • Complies with specific unit type closure requirements	As documented in the Draft Director's Final Findings and Orders between Ohio EPA and DOE, demonstration of compliance with substantive closure and post-closure requirements for hazardous waste management units will be documented in remedial design and remedial action deliverables. DOE will provide a cross-reference to Ohio EPA that will contain an index to closure and post-closure requirements within the RD/RA deliverables. The RD/RA deliverables will be submitted for review in accordance with the Amended Consent Agreement.	Waste Excavation Plan for the Operable Unit 1 Remediation System Design
Air Discharges	40 CFR 264.1030 - 264.1036, Subpart AA Air Emission Standards for Process Vents • Reduce total organic emissions below 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr) • Control device (condenser or absorber) must recover organic vapors with an efficiency of 95 percent or greater.	No regulations have been promulgated for process vents associated with thermal drying; however, 40 CFR 264.1030 - .1036 will be relevant and appropriate but not applicable to air emission standards for process vents associated with thermal drying. Design includes a scrubber and condenser in the off-gas treatment system. The *Process Description for the Remediation System Design* includes a discussion of the off-gas treatment system.	*Process Description for the Remediation System Design* Sections 4,5

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TABLE A-3
(Continued)

Category	Relevant and Appropriate Requirements	Compliance Strategy	Addressed In
Hazardous Waste	Post-Closure 40 CFR 264 Subpart G 40 CFR 264.117 (OAC 3745-55-17) 40 CFR 264.119 (OAC 3745-55-19) Post-closure care and use of property for a period as necessary to protect human health and the environment including: • Access controls • Monitoring Post-closure notices must include deed notation/use restriction.	As documented in the Draft Director's Final Findings and Orders between Ohio EPA and DOE, demonstration of compliance with substantive closure and post-closure requirements for hazardous waste management units will be documented in remedial design and remedial action deliverables. DOE will provide a cross-reference to Ohio EPA that will contain an index to closure and post-closure requirements within the RD/RA deliverables. The RD/RA deliverables will be submitted for review in accordance with the Amended Consent Agreement.	Waste Excavation Plan for the Operable Unit 1 Remediation System Design.
Monitoring	OAC 3745-57-91 and 92, Miscellaneous Methods of Waste Treatment Parts 91 and 92 include requirements for miscellaneous units environmental performance standards and monitoring, analysis, inspection, response, reporting, and corrective action.	This ARAR will be met by the implementation of the other ARARs that are protective of human health and the environment. Releases to the environment will be controlled by using a ventilation system with a scrubber and HEPA filter (for air discharges) and a stormwater/wastewater collection system (water discharges).	n/a
CAMUs	Corrective Action for SWMUs 40 CFR Subpart S 40 CFR 264.552,.553 Corrective Action Management Units (CAMUs) might be designed at the site as areas where remediation wastes (solid, hazardous, or contaminated media and debris) might be placed during the process of remediation. Temporary units (TUs) consisting of tanks and container storage units might be used to store and treat hazardous waste during the process of corrective action.	As an ARAR, the CAMU designation does not apply to waste disposed off-site; however, it does apply to waste that is managed on-site. OU1 pit wastes will be disposed of at an off-site facility and therefore, must meet all regulatory and disposal facility requirements. CAMUs can apply to residual soils remaining on-site. As such, residual OU1 soils will managed in accordance with the OU5 ROD which designates the FEMP site as a CAMU.	Record of Decision for OU5

TABLE A-3
(Continued)

Category	To-Be-Considered Requirements	Compliance Strategy	Addressed In
Monitoring	DOE Order 5400.1 @ p. iv - 1 Since each DOE facility is unique, the need and level of effort for monitoring programs shall be determined by the appropriate field organization on a case-by-case basis.	Operable Unit 1 is part of a DOE facility and is subject to these orders. The existing FEMP sitewide monitoring program will be used for the remediation facilities. If necessary, the existing program may be modified, but that decision will not be made until later in the project. The *Remedial Action Work Plan* will discuss sitewide monitoring.	*Remedial Action Work Plan*
Monitoring	DOE Order 5400.1 @ iv - 9, 10 Groundwater that is or could be affected by DOE activities shall be monitored to determine and document the effects of operations on groundwater quality and quantity and to demonstrate compliance with DOE requirements and applicable Federal, State, and local laws and regulations.	As discussed in Subsection 4.4.1 of the OU1 *Remedial Design Work Plan*, the existing FEMP groundwater monitoring program will be used for assessing potential impacts to the groundwater due to planned OU1 remediation activities.	*Remedial Action Work Plan*
Waste Management	DOE Order 5820.2A @ 1 Radioactive Waste Management DOE 5820.2A III.3h Management of Low-Level Waste, Long-Term Storage Radioactive and mixed wastes shall be managed in a manner that assures protection of the health and safety of the public, DOE and contractor employees, and the environment. 5820.2A III.3h requires achieving performance objectives of DOE. 5820.2A III.3a requires records and documentation be kept for storage of low-level waste and permits the storage of waste until disposal by approved methods.	The treatment and storage of OU1 radioactive wastes, and the other pollutants or hazardous substances they contain, will be accomplished in a manner that complies with all applicable Federal, State and local environmental, safety, and health laws and regulations, and DOE requirements. The *Transportation and Disposal Plan* identifies specific requirements for disposal.	*Transportation and Disposal Plan* Sections 5 and 6

REVISED SECTION 6.0 OF EXCAVATION PLAN

SECTION 6

MONITORING

This section covers Air and Worker Safety Monitoring that will be conducted during waste pit area excavation operations. Ground and surface water monitoring will be implemented as part of the Aquifer Restoration Project monitoring operations.

6.1 Air Monitoring Program

Two existing air emissions monitoring programs support the OU1 remedial action; they are the Fernald Site Environmental Monitoring Program and the Occupational Air Monitoring Program. Both programs will continue to be implemented throughout the OU1 remedial action. Data from these site-wide programs, as well as from continuous monitoring of point-source emissions from the OU1 remedial action, will verify the effectiveness of project-specific emission control measures. The remedial action deliverables associated with the actual air monitoring operations will be identified in the Remedial Action Work Plan.

Radiological Environmental Monitoring continues under the Fernald Site Environmental Monitoring Program on a weekly basis. Data is collected during the implementation of the remedial action from air monitoring stations located on site (including four environmental air monitors in the vicinity of the waste pits), near the fenceline, and at several locations in nearby communities. The monitoring program has been developed in response to United States Department of Energy Orders 5400.1 and 5400.5 and 10 CFR 835 and is presented in the Fernald Site Environmental Monitoring Plan, PL-1002.

Potential emissions from both point-sources (stacks) and fugitive sources (excavation activities, stored waste materials) have been evaluated for environmental impact and project-specific monitoring requirements. 40 CFR 61 Subpart H requires continuous monitoring of emissions from point sources with a potential impact to an offsite resident in excess of 0.1 mrem/year effective dose equivalent (EDE). As modelling of potential uncontrolled emissions from the dryer stack indicates a potential dose in excess of this level, continuous isokinetic monitoring of radionuclide emissions from the dryer stack(s) will be conducted to verify the effectiveness of radionuclide emission controls. In addition to continuous monitoring of point source radionuclide emissions, continuous monitoring of radon emissions from the dryer stack(s) will be conducted to verify that radon emissions are being adequately controlled.

Activities such as excavation of waste pit material, and storage and transport of excavated materials have the potential to generate fugitive emissions of radionuclides. These same activities will also generate emissions or radon. Estimates of fugitive radon emissions, however, indicate that emissions from these sources will be quite small in magnitude compared to point source emissions. As is discussed in the

Waste Excavation Plan for the OU1 Remediation System Design Section 5.0, and in the Design criteria Document for the Operable Unit 1 Remediation System Design Appendix B, Best Available Technology (BAT) control measures, such as application of water, or covering of exposed materials, will be utilized to minimize fugitive emissions. Data from the Fernald Site Environmental Monitoring Program described above will be reviewed on a continuous basis to assure that any increase, or higher than anticipated level of emissions will be promptly identified so that corrective measures such as enhanced control measures, operational changes, or additional monitoring can be implemented in a timely manner.

In addition to the air monitoring network described here, Radiological Environmental Monitoring is also conducting environmental monitoring and surveillance of radon. This program has been previously documented and discussed in the CRU1 Dewatering, Excavation, Evaluation Program. The radon monitoring program currently has several continuous radon instruments in the waste pit area.

6.2 Occupational Air Monitoring, Chemical (Volatile Organics and Heavy Metals)

Personnel monitoring for workers conducting activities associated with OU1 remedial activities is conducted to access exposure to volatile organic compounds (VOCs) and heavy metals. The VOCs and metals sampled for are based on air monitoring data collected during the DEEP.

The amount of sampling conducted is based on the task being conducted and the potential for exposure. This information is further defined as the remediation design is completed.

For personnel VOC sampling, it is anticipated that personal Photoionization Detector (PID) units with alarming features will be used along with long term sampling equipment.

For personnel heavy metal sampling, it is anticipated the personal sampling pumps with particulate filters will be used.

In addition to the personnel monitoring, area monitoring for VOCs is conducted. The VOCs are monitored using PID, FID, or other direct reading portable equipment and sorbet tubes.

At this time, the use of respiratory protection along with protective coveralls (anti-c's) is anticipated for some workers on a temporary basis. Specific personnel protective equipment requirements will be determined when the excavation plan is completed.

All Radiological Control air sampling that is to be performed during the excavations of the waste pits is intended to supply information to Radiological Engineering and Radiological Assessment (field support) for implementation of worker protection requirements. Radiological surveys (radiation and

contamination) are performed to assess conditions in the work areas and are used in conjunction with the air sample data to determine personal protective requirements.

The isotope of concern for the Radiological area that isolates Waste Pits 1-4, the Burn Pit, the Clearwell, and the Pit 5 Contamination Area is Thorium-230. The Derived Air Concentration (DAC) for Th-230 is 3E-12 μCi/ml. The DAC for Radon-222 (in the Uranium-238 decay chain) progeny is 0.33 Working Levels.

6.3 Radiological Control Air Monitoring to be Performed During OU1 Waste Pit Excavations

1) All personnel entering the contamination area that isolates Waste Pits 1-4, the Burn Pit, and the Clearwell are required to wear Personal or Breathing Zone Air Samplers (Lapel Air Samplers). This is required for all thorium areas and the information is used for internal dosimetry purposes.

2) High or low volume general area air sampling (for particulates) is performed at the excavation sites and at the boundaries of the Radiological Areas. This data also aids Radiological Control in determining necessary posting requirements and ensuring proper radiological controls and personal protective measures for work activities.

3) Radon grab sampling is performed in and around the excavation and at the boundaries of Radiological Areas. The samples are taken periodically during excavation to determine radon levels in worker occupied spaces and aids Radiological Control in determining necessary posting requirements and ensuring proper radiological controls and personal protective measures for work activities.

REVISED SECTION 2.2 OF EXCAVATION PLAN

7) Airborne Emissions - The release of fugitive dust is minimized.

2.2 Assumptions

During the evaluation of the top and bottom excavation approach, the following assumptions are made. Various ongoing programs (i.e., DEEP) have been performed to confirm the validity of these assumptions where necessary.

1) Many of the waste types particularly those encountered in Pits 3 and 5 have very low strengths and high moisture contents. It is assumed that the waste throughout the pit (and for the other pits with overlying soil caps) has sufficient strength to maintain a workable and stable slope and that pit caps can support excavation equipment. DEEP strength data indicate undewatered wastes have adequate strength to maintain workable excavation slopes. However, recommendations for slope adjustments in the field are made at the discretion of, and are to be the responsibility of, a qualified and competent field geotechnical engineer.

2) The potential for gas and particulate airborne emissions at the pits is assumed to exist. It is also assumed that these emissions are manageable and controllable to acceptable levels with readily available measures. As described in Section 6.0, data collected through the site-wide FEMP Environmental Monitoring Program, as well as continuous monitoring of point source (dryer stack) emissions, will be used to verify the effectiveness of emission controls.

3) It is assumed that blending (for material characteristics) of waste, as a part of the excavation operations, commences at the excavation. As necessary, this blending and mixing will be achieved by excavating in two or more areas with the desired different material characteristics. By alternately transferring truckloads of waste to the processing facilities, the blending continues through the various waste processing steps.

4) Equipment support system control for the operator (such as air supplied enclosed cab) and/or personal protective equipment requirements are assumed to be the same at the top and at the bottom of the pits.

5) The FEMP wastewater treatment system is assumed to be able to handle the quantity of storm and wastewater from the OU1 construction area and operating facility. (The quantity of water will be determined as the design progresses). Temporary storage of storm and wastewater may be required and will be based on the 25-year, 24-hour storm. Waste Pit area storm and wastewater is managed separately from storm and wastewater in the waste processing area. Both streams ultimately enter the Biodenitrification Surge Lagoon for treatment by the FEMP wastewater treatment system. (See the OU1 Remedial Facilities Process Description for additional clarification.)

REVISED APPENDIX D OF DESIGN CRITERIA DOCUMENT

APPENDIX D
Dryer Off-Gas Stack Limits

ASSUMPTIONS FOR MODEL

Assumptions	
Stack Height	60 feet
Stack Diameter	6 inches
Flow Rate	850 acfm
Exit Velocity	4,500 fpm
Ambient Temperature	67.7 degrees F
Stack Exit Temperature	95 degrees F

METSIM Data (PARSONS ID#01:145:140:-287-95) is the best current estimate of the concentration of contaminants in the off-gas.

Best Available Technology (BAT) - Low NO_x Burner fired with natural gas.

DRYER PRODUCT OFF-GAS LIMITS

Particulates: HEPA Filtration with a designed control efficiency of 99.97 percent at 0.3 microns.

Off-Gas Limits for Acid/Basic Emission			
Acid Emission	Stack Limit (lbs/hr)	MAGLC Value (mg/m^3)	Worst Case Emision Rate (lbs/hr)
Hydrogen Fluoride	1.42	0.026	1.0086
Hydrogen Chloride	4.09	0.075	0.0479
Nitric Acid	2.84	0.052	
Sulfuric Acid	0.55	0.01	
Ammonia	9.28	0.17	0.0
Nitrogen Dioxide	3.06	0.056	29.6784
Sulfur Dioxide	2.84	0.052	0.2219

Off-Gas Limits for Organic/Radon Emissions			
Organic/Radon Emission	Stack Limit (lbs/hr)	MAGLC Value (mg/m^3)	Worst Case Emission Rate (lbs/hr)
Radon	1.9 E+8 pCi/sec	0.5 pCi/l	34,818.2 pCi/sec
Carbon Dioxide	4913.66	90.00	3.9501
1,1,1-Trichloroethane	1043.40	19.10	0.0316
1,1,2,2-Tetrachloroethane	3.82	0.07	3.72 E-04
1,1-Dichloroethane	221.29	4.05	0.0484
1,1-Dichloroethene	11.08	0.20	3.48 E-03
1,2-Dichloroethane	21.82	0.40	1.20 E-03
1,2-Dichloroethylene	431.88	7.91	2.40 E-03
1,4-Dioxane	49.30	0.90	0.23
2,4-Dinitrotoluene	0.082	0.0015	0.092
2,6-Dinitrotoluene	0.082	0.0015	0.092
2-Butanone	322.19	5.90	0.43
2-Hexanone	10.93	0.20	1.92 E-03
2-Methylnaphthalene	19.64	0.36	3.91 E-01
4,4 DDT	0.55	0.01	2.05 E-08
Acetone	970.78	17.8	0.34
Benzene	17.47	0.32	9.60 E-04
Carbon Disulfide	16.89	0.31	3.60 E-04
Carbon Tetrachloride	16.89	0.31	3.60 E-04
Chlorobenzene	25.11	0.46	5.40 E-04
Chloroform	26.75	0.49	0.098
Dichlorodifluoromethane	22.93	0.42	1.78
Dichloromethane	95.00	1.74	0.17
Diethyl Phthalate	2.73	0.05	0.16
Ethylbenzene	2369.62	43.40	2.88 E-02
Hexachloroethane	5.31	0.097	9.17 E-02

Off-Gas Limits for Organic/Radon Emissions			
Organic/Radon Emission	Stack Limit (lbs/hr)	MAGLC Value (mg/m^3)	Worst Case Emission Rate (lbs/hr)
Isobutyl alcohol	82.94	1.52	4.06 E-02
Isophorone	15.29	0.28	0.41
Methylene Chloride	95.17	1.74	0.22
Naphthalene	28.40	0.52	1.08
Pentachlorophenol	0.27	0.005	0.40
Phenol	10.36	0.19	0.087
Styrene	116.19	2.13	3.60 E-04
Tetrachloroethene	184.98	3.39	0.36
Toluene	102.81	1.88	0.022
Total Xylene	236.96	4.34	0.039
Tributyl Phosphate	1.20	0.022	7.20
Trans-1,2-Dichloroethene	431.88	7.91	2.69
Trichloroethene	146.76	2.69	0.26
Trichlorofluoromethane	3057.58	56.00	9.60 E-04
Vinyl Chloride	7.11	0.13	7.42 E-02